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BRITISH MEDICAL JOURNAL

LONDON SATURDAY OCTOBER 4 1941

HEAD INJURIES IN MOTOR-CYCLISTS

THE IMPORTANCE OF THE CRASH HELMET

BY

HUGH CAIRNS, D.M., F.R.C.S.

Temporary Colonel, R.A.M.C.; Nuffield Professor of Surgery, Oxford; Consulting Neurosurgeon to the Army at Home

During the first twenty-one months of war the number of motor-cyclists and pillion passengers killed on the road was 2,279—21% more than during the corresponding months of peacetime (1,884 killed between September, 1937, and May, 1939). The frequency of head injuries was high (Table I), and in a number of cases the fatal outcome might have been avoided if adequate protection for the head had been worn. But, as will be observed, the issue is not clear-cut, since multiple injuries other than head injuries undoubtedly contributed to death, though to what extent cannot be defined.

The second section of this paper deals with such material as it has been possible to collect relating to non-fatal head injuries to motor-cyclists; the third briefly indicates some of the causes of accidents, and offers suggestions for prevention and for protection to the heads of riders by the general use of crash helmets of a type described. In conclusion, 7 cases, seen by me, are reported of non-fatal injuries to riders wearing crash helmets, and evidence is adduced to show that in most of them graver injuries would have been sustained without such protection.

Fatal Injuries

Through the kindness of the Royal Society for the Prevention of Accidents and of the Registrar-General it has been possible to procure the particulars and the certified cause of death in a series of 149 fatal accidents occurring among motor-cyclists (excluding pillion passengers) in the last four months of 1940. Table I shows that in 102 of 111, or 92%, of the cases in which the cause of death is specified a head injury occurred. In 85 cases death was ascribed to head injury without mention of other injury, but from additional information obtained as to 10 of these cases, either from case notes or from inquest reports, it becomes clear that, when the head injury dominated the clinical picture, other injuries often were not mentioned in the death certificate. Thus in one case there were, in addition to the head injury, fractures of humerus, fibula, and fingers; in another, fracture of one clavicle; in another, compound fracture of the femur; in two cases, bad burns owing to a petrol fire when two motor-cyclists met in head-on collision. In addition, in one other case, in which the patient was certified as dying from shock following multiple injuries, Dr. Robb-Smith found at necropsy the following injuries: fractures of the anterior and middle cranial fossae, slight subdural haemorrhage, multiple areas of cerebral contusion, fractures of the mandible, maxilla, nasal bones, compound fracture of the right tibia and fibula, and slight laceration and fat embolism of the lungs. In probably two-thirds or more of the 149 fatalities there were multiple injuries of a major character, though head injury was a factor in most of the 149.

TABLE I.—*Certified Cause of Death in* 149 *Cases of Accidents to Motor-cyclists* (149 *Cases*)

Head injuries*		102
Head injury alone	85	
,, ,, and other unspecified injuries	11	
,, ,, ,, fracture of lower limb	2	
,, ,, ,, spinal injury	1	
,, ,, ,, facial injury	1	
,, ,, ,, meningitis	2	
Multiple unspecified injuries		38
Other injuries		9
Fractured jaw and pneumonia	1	
Fracture-dislocation of cervical spine, etc.	1	
Thoracic injury, with haemorrhage, etc.	1	
Thoracic and abdominal injury, with haemorrhage	1	
Abdominal injury, with haemorrhage	2	
Fractures of limbs	2	
Multiple fractures of limbs and crushed thorax	1	

In 3 of the above cases gas gangrene was given as a cause of death. In 3 of the cases death occurred under anaesthesia for operation on the injuries.

* The term "head injury" is used to cover the following terms on the death certificate: Fractured skull, contusion of brain, laceration of brain, intracranial or cerebral haemorrhage following injury, oedema of brain due to injury, cerebral compression.

To assert that head injury is the sole cause of death in motor-cycle accidents would be misleading, but there can be little doubt that many patients in this series would have lived if their heads had been adequately protected. It is the combination of injuries, each in itself probably not fatal, that so often produces death, as in the following case.

Case I: Fatal Injury

A man aged 22 (Serial No. 131) collided in the black-out with a lorry which had pulled out to overtake a car. He was not wearing a crash helmet. He had concussion and a compound depressed fracture of the right frontal region, a fracture-dislocation of the right ankle, and laceration of the adductor muscles of both thighs. This case has already been described in detail elsewhere (Russell, 1941, Case 2), and it is only necessary to give the main points here.

He was unconscious for three-quarters of an hour after the injury. He showed a fairly severe degree of shock, but following a transfusion he improved. He then complained of pain in the right ankle and became very restless; for this it was necessary to give nembutal and later morphine. Twenty hours after the injury he became unconscious again, and remained so until death. Forty-five hours after injury he began to have convulsive seizures, and twelve hours later he died. His pulse rate was never below 140.

Necropsy (Drs. Robb-Smith and Dorothy Russell) showed, in addition to the injuries already described, a long right fronto-parietal fracture extending on to the roof of the right orbit and involving the sphenoidal and ethmoid sinuses, which contained blood. There was also a fracture of the roof of the left orbit. The right frontal lobe showed superficial laceration of its dorsal surface over an area 5 by 2.5 cm., and the overlying dura was torn. In the brain, beneath the laceration, there was a wedge of softening and diffuse haemorrhage up to 2.5 cm. deep, and the anterior half of the right frontal lobe showed slight oedema. There were also a few punctiform haemorrhages

in the convolutions of the left hemisphere. Microscopic examination revealed fat emboli in the cerebral hemispheres and choroid plexuses.

The lungs showed focal haemorrhagic zones, early inhalation pneumonia, and considerable fat embolism. The adductor muscles of the thighs were grossly torn and bruised, with haemorrhage extending up into the retroperitoneal tissues.

In this case the damage to the brain, apart from fat emboli, was almost entirely restricted to the site of impact. There was no contrecoup damage; probably neither head injury nor limb injury was in itself sufficient to cause death. The injuries as a whole caused shock, and there was blood loss from scalp bleeding. Brain damage produced restlessness, which increased the pain from the foot, and this made the patient more restless. Restlessness may have promoted fat embolism of lungs and brain.

The outlook is often far more grave when head injuries are complicated by injuries elsewhere. The pulse tends to be more rapid, pneumonic signs may set in, often as a result of fat embolism (Robb-Smith, 1941; and Rowlands and Wakeley, 1941). Such patients are in a highly critical state and may be made worse by manipulations, such as setting of their fractures. They tend to travel badly in the early stages. This may be one reason for the fairly general belief that patients with head injuries travel badly—an impression not confirmed by observation of uncomplicated head injuries.

These are some of the most difficult accident cases to treat: they require careful resuscitation, much individual attention to wounds, and continuous supervision so that the right time may be chosen for setting the limbs, operating on the head wounds, and so forth. And the patient should be moved as little as possible. It is not surprising that three of the patients in the series were reported as dying under anaesthesia.

If in Case I a crash helmet had been worn the patient's head injury would probably have been less severe and he might not have died. With equal right it could be argued that if his lower limbs had been protected from injury he would not have died. Protection of the lower limbs is obviously more difficult than protection of the head, but the problem deserves further study.

The rarity of thoracic and abdominal injuries in fatal motor-cycle accidents is to be noted (Table I). Spinal injury also appears to be rare, but is easily overlooked in an unconscious patient and also, if not specifically sought, at necropsy.

Non-fatal Injuries

It is difficult to get a comprehensive picture of the non-fatal accidents in motor-cyclists or to estimate their frequency. They are evidently fairly common, for in a series of 556 blunt head injuries of known cause admitted over a period of fourteen months to a hospital for head injuries, some in the acute stage but many more in the chronic stage, 122, or approximately 22%, were in motor-cyclists. Of the 122 patients 22 had fractures or other major injuries in parts other than the head. These included fractures in various long bones, with a slight predominance in the lower-limb bones, fractures of the mandible, dislocation of the shoulder, and one case of injury to the spinal cord. This material has the disadvantage of being selected, since the hospital is primarily devoted to head injuries. The proportion of cases showing multiple injuries is therefore probably lower than in an unselected series. There are no examples of brachial plexus injury—known to be a serious and not infrequent result of motor-cycle accidents—possibly for the reason that in accidents affecting the brachial plexus the supraclavicular region receives the force of the blow and the head escapes damage.

The site of violence to the head, as indicated by scalp lacerations or by fractures, shows a predominance of frontal injuries (Table II), but no part of the cranium is exempt. There are several cases of fractures of the occipital bone, at times extending into the foramen magnum. The common injury, however, is a frontal blow, with laceration of the forehead and multiple fractures, linear or depressed, in the underlying bone. Fracture lines often extend to the roof of the orbit and to the frontal and ethmoidal sinuses, and, in the other direction, backwards along the vertex towards the parietal region. There is superficial laceration of the frontal lobes, and usually the dura is torn. Sometimes there is cerebrospinal rhinorrhoea. There is considerable haemorrhage in both orbits, and sometimes damage to an eyeball or to an optic nerve. The olfactory pathways also are not infrequently interrupted.

TABLE II.—*Site of the Blow in Motor-cyclists' Head Injuries (93 Cases)*

Frontal	52	Parietal	17
Temporal	12	Occipital	12

Causes and Prevention

Speeding, especially at corners, poor visibility in black-out or fog, skidding, overtaking, convoy duty, sudden gusts of wind from side-streets—these are some of the causes of accident. The fatal accidents have been carefully analysed by the Royal Society for the Prevention of Accidents, and the reader is referred to their *Road Accident Bulletins*, Nos. 10 and 12. No doubt the conclusions drawn from this analysis would be equally applicable to non-fatal accidents.

The most important and effective method of preventing head and other injuries is careful driving. There seems to be particular need to impress this obvious fact upon motor-cyclists, since they, more than users of other types of motor vehicle, appear to be exhilarated by their speed and therefore reckless in attaining it. And, unlike occupants of a motor-car, they are not protected by their machine. When motor-cycle accidents occur at high speeds no amount of protection of the head or other parts will prevent gross and often fatal injuries. It is not sufficiently realized that a slight increase in speed may produce a very great increase in the amount of damage.

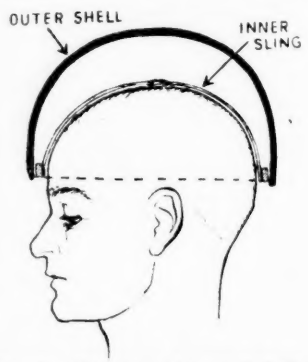

FIG. 1.—Diagram of a crash helmet.

It is the purpose of this paper to advocate for all motor-cyclists, civilians and fighting Forces alike,* the use of a crash helmet of the type worn by racing motor-cyclists. It consists (Fig. 1) of an outer shell of some firm substance, shaped rather like an inverted pudding-bowl and quite smooth on its outer surface. This is supported by a lining consisting of a series of web slings fitting snugly on the rider's head and attached by its base to the base of the outer shell. The helmet is also retained in place by a chin-

* The requirements of troops under fire are not considered in this paper.

strap. Between the outer shell and the lining there is a gap which may with advantage contain some energy-absorbing material.

Report of Cases of Non-fatal Injury

So far I have seen only seven cases of motor-cyclists injured while wearing a crash helmet.* In all of them the effects of the head injury had been unusually mild.

Case II

A rifleman aged 23 (Serial No. 1003) had had a slight head injury, with fifteen minutes' amnesia, two months before his accident during night exercises on June 6, 1941. Riding at 30 m.p.h. he ran into the back of a stationary vehicle. He was

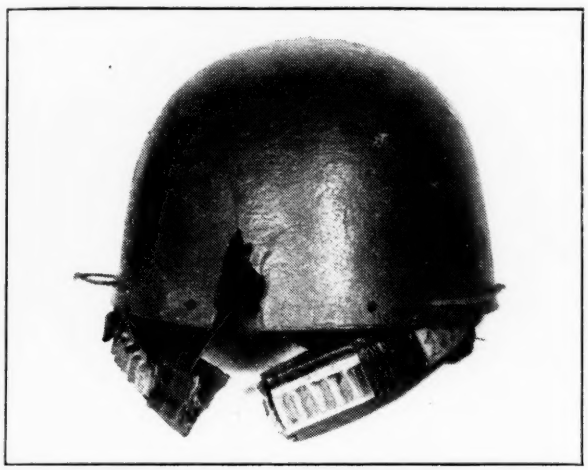

Fig. 2.—Case II. Damage to the outer shell and inner sling of the crash helmet in the right frontal region.

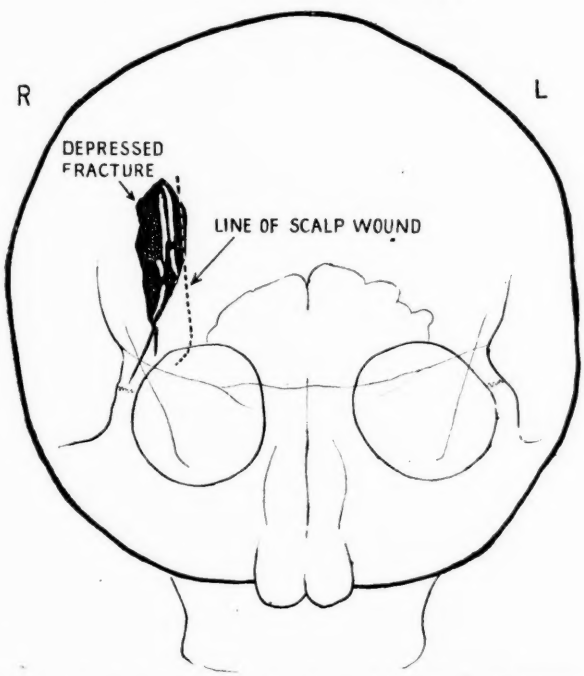

Fig. 3.—Case II. Tracing of radiograph of depressed fracture beneath the site of damage to the crash helmet.

rendered unconscious and sustained a lacerated wound on the right side of his forehead, also a simple transverse fracture of the right tibia and fibula just below their mid-points. His crash helmet was broken in the right frontal region, where part of the outer shell was detached, and beneath this gap the base of the inner sling was broken (Fig. 2). From the upper end of the gap in the outer shell two fissures extended into the rest of the shell, each for a distance of about 2 cm. The gap in the helmet corresponded to the site of scalp laceration. Beneath the scalp wound, but slightly lateral to it, there was a double line of fracture, slightly depressed at one edge (Fig. 3), which extended into the external angular process of the frontal bone.

The duration of his retrograde amnesia was at first uncertain, but two months after the accident he had recovered memory of past events up to within four minutes of the accident. His first memory was of a time forty hours after the accident. During this period of amnesia he had a generalized convulsion, was twice given 1/4 grain of morphine for restlessness, and also had his scalp wound excised and sutured under pentothal anaesthesia.

He was transferred to a military hospital for head injuries on June 12. At that time he was conscious, lucid, and quiet, but he was a little drowsy and showed some defect of memory and concentration and very slight nominal dysphasia. Speech was otherwise normal. He was a left-handed man. He had some stiffness of the neck and very slight papilloedema. There was slight left lower facial weakness. The other cranial nerve functions and motor, sensory, and reflex functions were normal. He was complaining of considerable frontal headache. Lumbar puncture on the eighth day showed a clear colourless fluid under a resting pressure of 90 mm. H_2O, containing 0.045% of protein, and 2 lymphocytes and a few red blood cells per c.mm.

Within a few days he became normally alert, his verbal memory became normal, and his papilloedema subsided. His headache persisted unusually long, but finally disappeared after three weeks. The fractured tibia and fibula were treated by manipulation and plaster, and good union was obtained. Return to full duty was delayed by the leg fracture.

This man evidently received a severe blow on the right frontal aspect of his crash helmet, with the production of a scalp wound immediately beneath. Damage to the skull was limited to a fracture beneath the lateral edge of the scalp wound. The appearances suggested that the helmet had struck a slightly concave object which had punched a fairly clean hole in the helmet and had driven the piece of outer shell inwards. Without the crash helmet there is little doubt that a deep penetrating injury would have been produced and that the fracture, like so many of the fractures in unprotected motor-cyclists, would have spread, to involve the frontal and ethmoid sinuses and the roof of the orbit, with considerable displacement of the frontal bone and the eyeball and also laceration of the frontal lobes—an injury, in fact, like that of Case I. As it was, the brain damage was evidently inconsiderable: to judge from the lumbar puncture there was little or no intracranial bleeding, and the evidence of brain damage was limited to slight and fleeting impairment of verbal and other memories. The fact that post-traumatic amnesia lasted forty hours is certainly not a reliable indication of the extent of brain damage, since he received 1/2 grain morphine and intravenous pentothal during that period.

Case III

A lieutenant aged 23 (Serial No. 582) had a motor-cycle accident while on convoy duty on April 16, 1941. He was overtaking a van, probably at 40 to 50 m.p.h., when it suddenly pulled out to the right and he crashed into it. He had head injuries, a wound five inches long into the left knee-joint, and a transverse fracture of the left patella without displacement, also bruising of the right elbow and left wrist. His crash helmet showed severe injuries on the right side (Fig. 4): the paint was removed in a patchy fashion over a wide area—an indication of the extent of the violence; and there was a T-shaped fracture, with one limb running vertically downwards to the free edge of the helmet above and behind the right ear, and the other passing forwards at right angles to the first almost to the middle line in the frontal region. From the junction of the T, also, a faint crack extended backwards for 2 cm. One of the loops of the inner sling of the helmet was completely torn from its attachments.

* Since this paper was written a further 8 cases have been seen. In all except one there was considerable damage to the crash helmet. All the patients were mildly concussed; one of them had a moderately severe frontal fracture. All made a complete recovery.

On the scalp there was a superficial laceration 1.5 cm. long in the right parietal region, which lay about 1.5 cm. below the junction of the fracture lines in the crash helmet when this was comfortably worn in the usual position. The laceration was evidently produced by indentation of the helmet at the posterior end of its horizontal fracture line. The fact that the two lines did not correspond when the helmet was worn in the usual position gives some idea of the extent to which the helmet was deformed and crushed on to the head at the time of the impact, once the inner sling had broken (Fig. 5). In the skull there

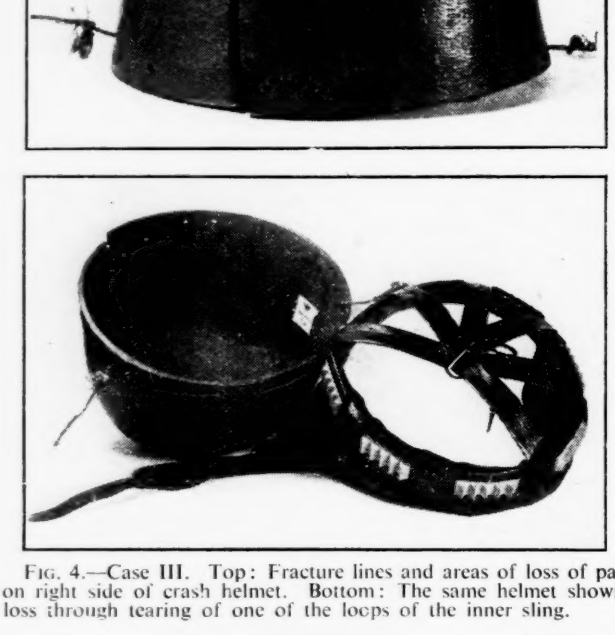

FIG. 4.—Case III. Top: Fracture lines and areas of loss of paint on right side of crash helmet. Bottom: The same helmet showing loss through tearing of one of the loops of the inner sling.

FIG. 5.—Case III. Superimposed diagram of crash helmet and skull, showing lines of fracture in outer shell of helmet, scalp wound, and fissured fracture.

was a fissured fracture about 14 cm. long running forwards and downwards from immediately in front of the site of the scalp laceration almost to the outer angle of the frontal sinus.

The patient was rendered unconscious by the accident. His retrograde amnesia was no more than 1 to 2 seconds, and his first memory after the accident was about two hours later, at which time he was well orientated and showed no neurological signs. For the first few days he could not concentrate and was irritable. For ten days following the accident he had a constant, generalized, dull, throbbing headache, which disappeared a few hours after lumbar puncture (faintly yellow cerebrospinal fluid under a pressure of 140 mm. H_2O, and containing 35 mg. of protein per 100 c.cm. and occasional red cells).

His knee wound was treated with sulphanilamide, excision and suture, and fixation in plaster. He walked six weeks after the accident and recovered normal function of his left lower limb six weeks later, at which time he was perfectly well in other ways.

This case illustrates well the value of the crash helmet. A severe blow on the head was partly expended on breaking the crash helmet. It did, however, produce a fracture of the skull beneath one of the fractures of the crash helmet, also a scalp wound. In spite of the fracture of the skull the brain injury was of a minor character, producing a brief period of amnesia and several days of headache, from both of which symptoms rapid and complete recovery ensued. The areas of the helmet denuded of paint (Fig. 4) indicate that the effect of the blow (or series of blows) was widespread, an obvious advantage to the brain and possibly resulting from the smooth round surface of the helmet.

The superimposed diagram of crash helmet and skull radiograph (Fig. 5) shows that the horizontal fracture in the crash helmet is not parallel with that of the skull. It indicates also the degree to which the crash helmet must have been crushed down on to the head by the blow, since it may be presumed that at the time when the skull was actually fractured the junction of the fracture lines in the crash helmet lay approximately over the scalp laceration.

Case IV

A private aged 26 (Serial No. 914) had an accident on July 27, 1941, when he ran into a car coming out of a side turning. He had no memory of the accident or of the five minutes preceding it, but it is probable that he was travelling at about 25 m.p.h. He had no memory for fifteen minutes after the accident, but his memory of subsequent events was clear.

His motor-cycle was very little damaged. He sustained a small shallow triradiate scalp wound over the right Rolandic region, about 2.5 cm. from the middle line, superficial lacerations above and below the outer part of his right eye (he was wearing goggles, which were very slightly bent but not broken), a subconjunctival haemorrhage on the outer part of the right eyeball, bruising below the left knee, but no fracture of long bones or of skull. From the radiographs it appeared possible that slight separation of the lambdoid suture had occurred, but there was no tenderness of the overlying scalp.

His crash helmet showed no sign of injury in the region of the small scalp wound, but in the left occipital region there was a fissured fracture 7 cm. long extending vertically upwards from an area of the free edge from which the paint had been removed. The helmet was otherwise undamaged. There was no bruising of the scalp beneath the site of this split, and the discrepancy between the site of the right frontal scalp injury and of the left occipital helmet fracture is not explained.

On admission to hospital three-quarters of an hour after the accident the patient was fully conscious and orientated and quite alert. Temperature was 98.4°; pulse rate 80; and mental examination and examination of the central nervous system showed nothing abnormal. The scalp wound was closed with two interrupted stitches. The patient had headache for the first day, but thereafter he was free from symptoms. He got up on the sixth day and was discharged to duty on August 14, 1941.

Case V

A gunner aged 27 (Serial No. 996), on March 29, 1941, was on his motor-cycle riding slowly in bottom gear from a country lane into a main road. He remembered no more, but was told afterwards that a car ran into him from behind. His crash helmet was not broken, but showed an irregular area of abrasions,

13 by 7 cm., in the left frontal region, and at the postero-medial edge of this area a shallow dent in which the material of the outer shell was softened. In the area of abrasions the varnish was removed and there were numerous curved linear lacerations in the paint running downwards and forwards in parallel lines, and deepest at the antero-lateral margin of the area (Fig. 6). One of the web slings was also torn.

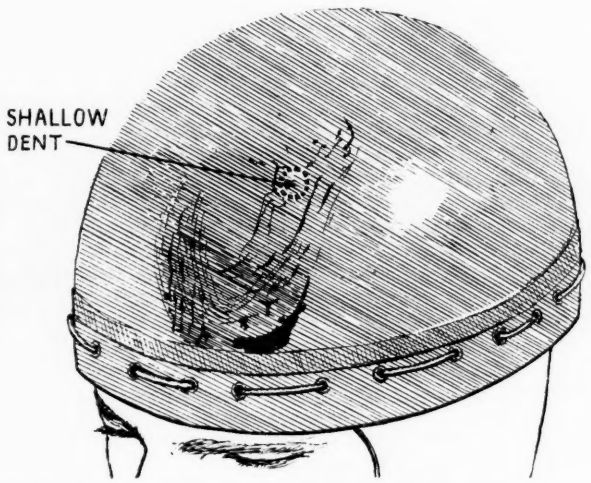

FIG. 6.—Case V.—The effects of a tangential blow on the outer shell of crash helmet.

The patient had no abrasions on the scalp or fracture of the skull. The scalp beneath the site of helmet injury was marked by an area of tenderness which persisted for a few days. As indicated above, there was retrograde amnesia for a few seconds. Post-traumatic amnesia lasted twenty-four to thirty-six hours. He was kept in bed for nineteen days with at first fairly continuous left fronto-parietal headache. Then after only two days out of bed he was returned to his unit, where headaches recurred and he was sent back to hospital. During the next seven weeks he was in two different hospitals and one convalescent depot. At the end of this treatment his headaches were better and he returned to his unit for six days, during which period he had an attack of dizziness. He was returned to hospital, where, after lumbar puncture, he developed intense headache and vomiting. He became depressed and anxious about his own health and that of his wife, who was living in a bombed area and was five months pregnant. He was admitted to a military hospital for head injuries on June 26, 1941.

Inquiries showed that his upbringing had left much to be desired. In peacetime he had had considerable difficulty in getting employment. He enjoyed his life in the Army, but did not mix well with his comrades. He had a horror of bloodshed. Examination showed no abnormality in the central nervous system and only a moderate degree of intelligence. He appeared anxious to succeed at his work, but he was an unstable type of man. He was discharged from hospital on August 18, 1941.

The post-concussional syndrome so well illustrated by this case is a problem entirely different from that with which we are primarily concerned. The case is reported in detail to emphasize the fact that crash helmets cannot be expected to prevent such a syndrome, onset of which does not depend on the severity of the initial head injury, especially in patients of poor mental stamina.

The position of the abrasions on the helmet (Fig. 6) suggests that this patient received a tangential blow, striking first the front part of the helmet to the left of the middle line and proceeding downwards and outwards to the left. This tangential type of injury is on the whole the least harmful type of blow to receive. Dirt-track riders and other experts try to throw themselves clear of the machine at the last moment before the accident. They prefer to volplane to earth and, in so doing, to escape with grazing injuries which are relatively harmless. The longer the body takes to come to rest the less is the force of impact. When the head comes into contact with the ground it is obviously better that the outer shell of the helmet should be abraded than the scalp and skull.

Case VI

A major aged 29 had a head-on collision with Case VII while on exercises on March 27, 1941. Neither man has any memory of the accident, but probably this patient was travelling at 35 to 40 m.p.h. and Case VII at slightly over 40 m.p.h. Case VII's bicycle was a total wreck, and the front wheel and forks, handlebars, and lamps of Case VI's bicycle were destroyed beyond repair. Both patients were wearing crash helmets.

In this patient the injuries were a small wound in the occipital region one inch in front of the external occipital protuberance, two upper incisor teeth knocked out, a fracture of the upper jaw, cut lower lip, and a compound comminuted fracture of the right patella, and he was unconscious. His crash helmet showed a slight dent in the right fronto-lateral region, and its varnish had been scraped from two areas—one just below the dent and the other in the occipital region. These marks of violence were slight, and it is therefore doubtful whether his head received any severe blow. Radiographs of the skull showed no fracture. His retrograde amnesia was ten to fifteen minutes. His first subsequent memory was three or four days after the accident. During the latter part of this period he wakened readily and responded promptly to questions; he fell asleep easily, was confused and disorientated, and kept asking the same question again and again. For nearly three weeks after the accident he found, when he tried to discuss the affairs of his unit, that his memory was a little hazy. When seen four weeks after the accident he showed no abnormal neurological signs and his intellectual functions and mood were normal. He had suffered twice in earlier years from periods of depression.

Until six weeks after the accident he had recurrent frontal headaches, with occasional pain in the right occipital region and back of the neck. For a further four weeks he remained bedridden on account of his fractured patella. This was treated first by sulphanilamide dressing and plaster, then by secondary suture, and later by excision of the comminuted patella. The final result was a useful limb, with slight limitation of movement at the knee, and return to duty.

It is difficult to estimate the value of the crash helmet in this case. The marks of violence on it were slight, and much of the force to the head and neck appears to have been taken on the face. However, there was a period of unconsciousness or confusion lasting three or four days, and this suggests a fairly severe head injury from violent rotation of the head, or a milder head injury complicated by fat emboli to the brain. There was nothing remarkable about the completeness of the subsequent recovery of intellectual function, though its promptness was unusual.

The position of the superficial scalp cut must be noted. It was a transverse cut an inch long across the middle line one inch in front of the external occipital protuberance. It was within the area protected by the crash helmet. A similar scalp laceration was found in Case IV.

Case VII

A lieutenant aged 23 met Case VI head-on at a bend in the road. He was wearing a crash helmet. He had no bruises on the head or face, and *x*-ray examination showed no fracture of the skull. He had a compound supracondylar fracture of the right femur and a fracture of the right tibia into the knee-joint, also abrasions on the left lower limb and back. His crash helmet was smeared with blood, but there were no marks of violence on its outer surface; however, the loops of webbing on the interior were in places partly torn from their attachments. He had no memory for a period extending from about ten minutes before to between fifteen and thirty minutes after the accident. On regaining consciousness he was worried because he did not know where he was or how he had hurt himself. He lost consciousness again in the ambulance, but regained it in hospital later in the day, and thereafter was lucid. He had no headache, but was for a time a little nervous at night. He had always been highly strung. When seen four weeks after

the accident he showed no neurological signs or impairment of intellectual function.

His broken leg was treated first by extension in a Thomas splint and then by fixation in plaster. He was discharged from hospital on August 13, 1941, with a useful limb.

This patient, like Cases VI and VIII, was detained in hospital for a long time because of his leg injury, and he could have returned to duty much earlier if it had been only his head injury which required treatment.

Case VIII

A second lieutenant aged 23 (Serial No. 997) had an accident on June 12, 1941, when he had a head-on collision with an oncoming car. The front wheel of his motor-cycle was buckled and the handle-bars were bent. He sustained a head injury, a double compound fracture of the middle of the shaft of the right femur, a simple butterfly fracture of the right tibia in the lower third, and lacerations of the right knee and right hand. His crash helmet had a little blood on its outer surface, but was otherwise undamaged. There was no sign of injury to the scalp and radiographs of the skull were negative. His retrograde amnesia was one second or less, his post-traumatic amnesia no more than a few minutes. He states that he was lucid after that, but the hospital notes say that he was irrational for the first few days following injury. During that time he complained of headache, though subsequently he denied ever having had any.

When seen eleven days after the accident he was lucid and co-operative and showed no neurological signs or impairment of intellectual function, notwithstanding slight infection of the thigh wound and nocturnal fever. His lower-limb fractures presented a difficult problem of treatment. Extension for the femur was obtained by a Steinmann's pin through the upper end of the tibia, and the tibial fracture was fixed by open operation.

The head injury was obviously very slight in this case, and there is no evidence that the crash helmet in any way decreased its severity.

Discussion

It is difficult to collect conclusive evidence in favour of crash helmets. No hospital capable of studying this problem receives unselected cases, and it is impossible to judge from any figures available the seriousness of motor-cyclists' head injuries. Some motor-cyclists die on the road. Others are admitted to the nearest hospital and may die within the next two or three days, or, if they recover, may eventually find their way to a central hospital or back to work. Mild cases may never go to hospital at all. Little help can be obtained from central records, since the relevant information is scattered in several different Government Departments.

Though the seven cases reported here cannot be regarded as representative, they constitute, when considered individually, an encouraging experience with crash helmets. In all of them there was concussion. In four cases the damage done to the helmet was considerable: in three (Cases II, III, and IV) the helmet was fractured, and in another (Case V) it bore the marks of a severe tangential blow. In two cases (Cases VI and VII) the damage to the helmet was slight. In Case VIII there was no evidence of damage to the helmet, and it is not impossible that the mild concussion resulted from violence transmitted to the cranium through the spinal column. In the other six cases, however, there is clear evidence of a blow on the head.

In Case II a portion of the helmet appears to have been punched out, and beneath the gap there was a scalp wound and a slightly depressed fracture (Figs. 2 and 3). In Case III the force of the blow was applied over a wide area of the helmet covering the right parieto-frontal region, with the production of an extensive T-shaped fracture in the outer shell (Fig. 4); in addition to a fissured fracture of the skull there was a small scalp wound, from the position of which it was possible to judge to what degree the outer shell of the helmet had been jammed down on to the head at the time of injury (Fig. 5). This extreme displacement of the outer shell could only have occurred when the inner lining of the helmet had given way as a result of one of the slings being torn from its moorings, as shown in Fig. 4. The case illustrates the importance of a strong inner lining.

The crash helmet used in these cases did not invariably prevent fracture of the skull, but it is probable that it did prevent the fracture from spreading as far as it otherwise would have done. In frontal injuries when there is no crash helmet the fracture usually extends back along the roof of the orbit and into the accessory nasal sinuses, whereas in the frontal injury of Case II the fracture was limited to the area of damage of the crash helmet.

The brain damage in all cases was remarkably slight, as judged by the absence of neurological signs and by the promptness and completeness of the recovery of intellectual functions. To be sure, head injuries of similar mildness do occur in motor-cyclists who have not worn crash helmets, but in accidents of the type of Cases II, III, and V the initial neurological disturbance is usually much greater and the recovery slower, though not necessarily less complete.

Theoretically there are certain disadvantages in the crash helmet. It increases the diameter of the head and so the leverage, thus enhancing the possibility of broken neck or rotational acceleration within the cranium. But if the helmet is adequately designed to deaden the blow, then the leverage of the blow is also deadened. Further experience is required to settle these points, and doubtless there is still considerable work to be done in improving the means of diverting the energy of the blow from the brain. It is to be hoped that surgeons will report their observations of head injuries in which crash helmets have been worn.

The frequency of fractures of the lower limb in this series calls for some comment. Five out of the seven patients had severe fractures of the lower limb, four affecting the right lower limb and one on the left side. This series is too small to permit conclusions to be drawn, but Mr. J. C. Scott has kindly supplied me with figures from the Wingfield-Morris Orthopaedic Hospital which suggest that there is a greater tendency to lower-limb fractures, especially compound fractures, in motor-cycle accidents than in other types of accident (Table III). In 10 fatal cases of my series in which full details of the injuries were available, 5 had fractures of the lower limb and 2 had fractures of the upper limb. If by the general use of crash helmets the number of fatalities in motor-cycle accidents is reduced it may be expected that the number of severe fractures of the lower limb requiring prolonged treatment will increase. Their prevention deserves further study.

TABLE III.—*The Relative Frequency of Fractures of the Lower Limb, due to Motor-cycle Accidents, at the Wingfield-Morris Orthopaedic Hospital during Twelve Months from June 1, 1940*

	Upper Extremity	Lower Extremity
Motor-cycle accidents ..	17 (2 compound, 15 simple)	40 (14 compound, 26 simple)
Other causes	196 (26 compound, 170 simple)	220 (24 compound, 196 simple)

Summary

In a series of over one hundred fatal accidents to motor-cyclists 92% suffered from head injury and approximately 66% had multiple injuries of a major character.

When non-lethal head injury is combined with other major but non-lethal injuries death may readily occur from cerebral fat embolism and other causes. Alleviation of the head injury by means of a suitable crash helmet may be expected to save life in some cases of this type.

The most effective method of preventing head injuries in motor-cyclists is careful driving. In addition the use of a crash helmet is advocated.

Seven accidents to motor-cyclists wearing crash helmets are reported. In all of them the head injury was mild, though in four there had been considerable damage to the crash helmet.

The incidence of fractures of the lower limb is greater in motor-cycle accidents than in other types of accident, and the number requiring prolonged treatment may be expected to increase when fatalities are averted by the use of a suitable crash helmet.

I am deeply indebted to Dr. H. Holbourn, D.Phil., for his help during the preparation of this paper, to the various people and organizations mentioned in the text, to the medical officers of a military hospital for head injuries under whose care most of these cases were, and to the Medical Research Council, who provided a grant in aid of the clinical note-taking. I wish also to thank Lieut.-Col. J. A. A. Pickard, D.S.O., for enabling me to study the records of the Royal Society for the Prevention of Accidents.

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A CASE OF CONGENITAL BILATERAL RENAL HYPOPLASIA

WITH A SHORT REVIEW OF THE LITERATURE

BY

J. ELLIOT MURRAY, M.D., Ch.B.
Consulting Physician to an E.M.S. Hospital

AND

R. A. SANDISON, B.Sc., M.B., B.S.
Resident Medical Officer at an E.M.S. Hospital

Numerous cases of unilateral renal hypoplasia compatible with adult life have been described, but no case of bilateral renal hypoplasia in which the subject survived to adult age seems to have been reported. Indeed, very little mention of the condition has been made by observers in the past. Herbst and Apfelbach (1935), referring to this subject, state:

"Hypoplasia of the kidney was known to Blasius in 1677. Ballowitz (1895) assembled 20 cases, Risel (1903) 36 cases. Since that time many cases have been added to the literature, some of which are definitely hypoplastic, whereas others should be classified as acquired atrophy or one of the other forms of congenital anomaly. . . . According to Papin, hypoplastic kidneys are more frequently found in men than in women, and the right side is more often affected. It has been found in all ages, from the foetus to advanced life. In the living it is always unilateral, since if bilateral it could not sustain life. It may lie in a normal position or may be ectopic. The renal pelvis is usually small and frequently cone-shaped with small calices, some of which may be rudimentary in type."

Marion (1939) stated that congenital hypoplasia of the kidneys can be found on both sides, but he does not dilate further on the condition, merely stating that he had never seen a case.

Eisendrath (1935) has recorded 17 cases of unilateral hypoplasia, and Johnson and Wayman (1936) 8 cases. Eisendrath makes the following points in the diagnosis of the condition:

1. Intravenous pyelography may indicate the extent of the renal parenchyma.

2. Retrograde pyelography may show: (*a*) a triangular or ampullary pelvis, with minor calices arising direct from the pelvis proper without intermediary major calices; (*b*) the presence of only one or two calices arising from a very small pelvis.

3. Cystoscopy is of little value. A rudimentary or occluded ureter may be found.

4. The presence of a small kidney shadow.

In describing the developmental anomalies of the kidneys, of which hypoplasia is one, it is necessary to distinguish carefully between the various conditions which have been described. Mayers (1940), in a classification of renal anomalies, recognizes the following developmental abnormalities:

Congenital Hyperplasia.—Increase in size or number of cellular units—for instance, long kidney, large kidney.

Congenital Hypoplasia.—A macroscopically recognizable kidney—for example, infantile kidney.

Congenital Aplasia.—Hypoplasia to a degree which is not recognizable macroscopically, but of which there is histological evidence.

Congenital Agenesis.—Complete absence of development, therefore no evidence of renal tissue. This may be either bilateral or unilateral (congenital solitary kidney).

A definition of the pathological picture of congenital hypoplasia is given by Johnson and Wayman (1936) as "an abnormally small kidney with fewer glomeruli than normal. These glomeruli are less closely packed together and are often larger than normal."

In connexion with aplasia and agenesis a rigid distinction between these two conditions has not always been made in the literature. Hinman (1940) states that congenital bilateral absence of the kidneys has been recorded 135 times since 1663. He goes on to say that proved bilateral agenesis—i.e., true non-formation rather than secondary atrophy—is even less frequent, for only recently has microscopical examination been carried out to ascertain the presence or absence of atrophied remnants of the metanephros. The majority of these cases of renal agenesis were associated with gross malformations of the other organs.

With regard to the frequency of these conditions, Soloway (1939) states that unilateral renal agenesis is found once in about a thousand necropsies, while bilateral renal agenesis occurs once in about six thousand necropsies. As indicated above, unilateral renal hypoplasia is relatively common, while bilateral renal hypoplasia is, unlike bilateral renal agenesis, almost unknown. The aetiology of these conditions is not known. Hinman (1940) believes that they are all due to developmental arrest, and that the ultimate stage reached (whether agenesis, aplasia, or hypoplasia) is one only of degree. He also admits the rare possibility of an inherent defect in the germ plasm. The following is a report of our case.

Case History

The patient, a man aged 22, a compositor in civil life, had joined the Army on September 23, 1940. He had always enjoyed good health until his present illness. His mother and father, aged 45 and 50 respectively, are alive and well and have never had any serious illness. There is no family history of any renal disease. The mother is said to have received sanatorium treatment many years ago. There is one sister, aged 20, who had infantile paralysis at 2 years of age, which resulted in weakness in the right leg. There is no history of miscarriages or stillbirths in the family. Both grandfathers of the patient are dead, the cause of death not being known. Both grandmothers are alive and well. The patient has never had rheumatic or scarlet fever; the tonsils were removed during childhood, but there is no record of any renal complications. The patient has never previously suffered from any urinary disturbance such as oliguria or frequency.

On October 8, 1940, he had a shivering attack and headache. His nose felt "stuffy" and the throat dry. No actual cold developed, but there was a slight dry cough. After a few days he produced some white sputum. The shivering disappeared, and about five days later he started vomiting, the attack lasting four days. He had no appetite, and on October 18 was slightly jaundiced. The vision became blurred on one occasion. On October 21 he reported sick and was admitted to an E.M.S. hospital.

On examination he looked ill, he was very drowsy, the tongue was dry, and the conjunctivae were slightly jaundiced. The temperature was normal and the pulse 52. There were no abnormal signs in the heart or lungs. The blood pressure was 130/85. The blood urea was 356 mg. per 100 c.cm., the red cells numbered 3,610,000 per c.mm., and the haemoglobin was 70%. The urine contained albumin + +, but no casts or red cells were seen.

The patient was transferred to our hospital on October 23 with a diagnosis of uraemia, and he remained there until his discharge on April 27, 1941. On admission the tongue was furred but moist, and he was somewhat drowsy, but his general condition was good. The cardiovascular system showed no abnormality and the blood pressure was 130/80. The optic disks were normal, with large physiological cups and a tigroid fundus background. The urine, specific gravity 1020, contained albumin + +, sugar *nil*, red blood cells +, pus cells +, a few crystals of uric acid, and no organisms. The blood urea on October 28 was 300 mg. per 100 c.cm. The van den Bergh reaction was within normal limits.

Subsequent Progress

The patient was kept in bed on a low-protein diet. The output of urine was at first small, but after two to three weeks it increased considerably in volume. By December 2 he felt his normal self again, having made steady progress. The blood urea had fallen progressively, and was 200 mg. per 100 c.cm. on December 2. He was then passing large quantities of pale urine of low specific gravity, containing from 0.15 to 0.20 gramme of albumin per 100 c.cm., estimated by Esbach's method. At this point he was allowed up, and he felt very well. The diet had meanwhile been slightly increased in protein. The blood pressure was 124/86. The blood urea on one occasion was 117 mg. per 100 c.cm., but it would not drop any lower. The urine contained granular casts on occasion. On November 9 intravenous pyelography was carried out, but there was no excretion of dye up to forty minutes.

On December 25 the blood urea was still high, and in a further effort to lower it he was confined to bed for two months. During this period the blood urea never fell below 101 mg. per 100 c.cm., and mostly fluctuated between 130 and 160 mg. In view of the failure of this treatment and his continued good health he was allowed up, and a month later was sent on leave. Immediately after his return to hospital, on April 10, 1941, the blood urea was 130 mg. per 100 c.cm. He continued to keep reasonably well, although he was easily fatigued and not fit for more than light work. There was still moderate albuminuria, and his condition had changed but little during the past four months. He was discharged from the Army, and on April 27 he left hospital to take up his civilian occupation. The blood pressure was then 130/82, and at no time was there any evidence of cardiovascular hypertrophy.

While in hospital the following additional laboratory findings were obtained:

Urea clearance: 9% average maximum normal on November 5, 1940; 4.8% average maximum normal on February 26, 1941.
Plasma CO_2, 29 volumes per 100 c.cm. on November 5, 1940.
Plasma proteins, 6.6%.
Blood cholesterol, 194 mg. per 100 c.cm.
Serum calcium, 8.4 mg. per 100 c.cm.
Serum phosphorus, 4.9 mg. per 100 c.cm.
Blood phosphatase, 15 units per 100 c.cm. on March 20, 1941.

X-ray Findings.—As mentioned above, intravenous pyelography on November 9 revealed no excretion of dye up to forty minutes. When repeated on January 20, 1941, it gave the same result. Retrograde pyelography of the left renal tract on February 15 and of the right side on March 20 clearly showed the renal shadows, and both were abnormally small. It is regretted that owing to paper shortage it has not been possible to reproduce the original films. The accompanying diagrams, however, indicate the state of affairs. The normal kidney lies between the level of the upper border of the twelfth thoracic vertebra and the third lumbar vertebra, the right kidney being slightly lower than the left (Fig. 1). In the films the right kidney shadow

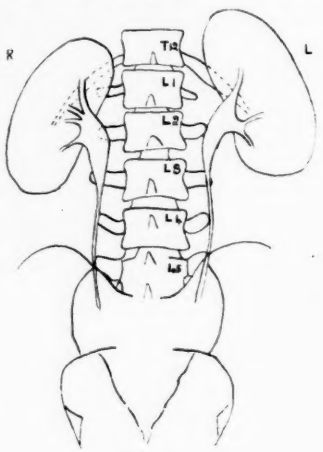

Fig. 1.

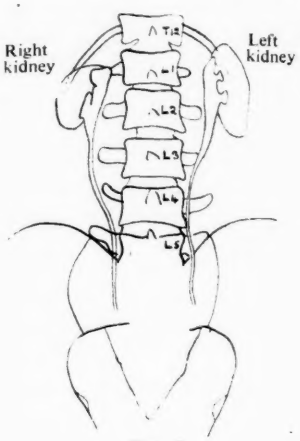

Fig. 2.

Fig. 1.—Outline diagram from a radiograph taken after retrograde pyelography in a normal healthy young adult.

Fig. 2.—Outline diagram from a radiograph taken after retrograde pyelography in our patient, showing features referred to in the text.

extends from the middle of the first to the lower border of the second lumbar vertebra, and the left kidney shadow extends from the lower border of the twelfth thoracic vertebra to the lower border of the second lumbar vertebra (Fig. 2). The kidneys are therefore normal in relative position, but each is only about half the normal size. The right renal calices are only two in number, and are flattened and deformed. The right renal pelvis is small. The left renal calices are three in number, but are flattened and deformed also. The left renal pelvis is fairly normal in appearance. The course and appearance of the ureters are within normal limits.

Cystoscopy showed that the bladder and the ureteric orifices were normal, as were the external genitalia, and there was no evidence of any other congenital anomalies.

Discussion

Although we were not in a position to carry out a post-mortem examination the following points enabled us to make a diagnosis of bilateral congenital hypoplasia of the kidneys:

1. The sudden onset of uraemia in a young adult without a previous history of renal disease is a feature of the case. Such a history is also characteristic in polycystic kidney, which is the only other bilateral congenital renal insufficiency known. This lends considerable support to the conclusion that the lesion is congenital.

2. The *x*-ray findings conform to the conditions laid down by Eisendrath (1935), quoted above, in the following particulars: (*a*) The kidney shadows are small. (*b*) There is a decrease in the size of the renal pelvis, with only two major calices on the right side. Flattening and deformity of the calices are present on both sides.

3. The absence of cardiovascular hypertrophy favours a congenital rather than an acquired lesion. According to Oppenheimer (1934) hypertension is found in only 57% of cases of polycystic kidneys. In chronic interstitial nephritis, with the so-called secondary contracted kidneys, it is exceedingly rare not to find hypertension.

The alternative diagnosis of chronic interstitial nephritis may be ruled out in view of the absence of any history of previous nephritis, the presence of definite *x*-ray evidence of deformed renal calices and pelvis, and the absence of any cardiovascular hypertrophy.

It has been stated by Herbst and Apfelbach (1935) that bilateral hypoplastic kidneys are incompatible with life.

The question whether this is so or not depends entirely on the number of functional glomeruli present in the hypoplastic kidneys. The normal kidney has an enormous reserve, and kidneys which possess at least a minimum number of functional glomeruli will certainly be compatible with life, just as the grossly damaged kidneys of polycystic disease or of Bright's disease may be able to support life for a number of years.

Among the other remarkable features of this case is the maintenance of reasonably good health with grossly inefficient kidneys. This suggests that a tolerance has been established to a high non-protein nitrogen in the blood over a number of years. It may here be remarked that this is good evidence that hypertension is more unfavourable to the patient with Bright's disease than is the glomerulotubular damage. Other points to be noted are the absence of any sign of renal infection and the relatively unchanged blood chemistry, apart from the blood urea. The latter findings also support the conclusion that the condition in this case is a congenital one.

Summary

A review of the literature on congenital developmental anomalies of the kidneys is given, with particular reference to hypoplasia, aplasia, and agenesis.

A case of congenital bilateral renal hypoplasia is described; this is believed to be the first one recorded in the literature.

Certain unusual aspects of the case, and the differential diagnosis, are discussed. Comparison is made with congenital polycystic kidneys, to which the condition bears considerable clinical resemblance. It is recorded that bilateral congenital hypoplasia of the kidneys is compatible with a reasonably healthy adult life.

We are much indebted to Dr. W. D. Nicol for permission to publish this report.

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A REVIEW OF DYSPEPSIA IN THE ARMY

BY

C. A. HINDS-HOWELL, B.M., M.R.C.P.

Temporary Major, R.A.M.C.; Medical Specialist

The present paper is a report on the dyspepsia in a military hospital during the year 1940. This hospital is situated in an area in which all types of troops are represented. During 1940, 8,702 medical cases were seen either as in-patients or out-patients; of these, 1,270 (14.6%) were diagnosed as disorders of the stomach or duodenum. I have collected the notes of 804 cases which were under my care, either in the gastric unit or as out-patients, during the first fifteen months of the war (October, 1939, to December, 1940). There were 420 out-patients and 384 in-patients, this latter figure referring only to cases admitted since April, 1940, when a gastric unit of fifty beds was formed. This unit was instituted so that uniformity in diagnosis and disposal could be achieved; and although the problems of administration, of dieting, and of investigations were simplified, there were great disadvantages in having these patients in a single ward together. Of the 804 cases 91 were Canadian, 6 New Zealand, and 707 (31 officers, 143 N.C.O.s, and 533 other ranks) British. There were only a few patients from the Dominions, because they operated their own hospitals.

The diagnosis may be summarized as follows. Dyspepsia of all types, 804 cases: gastro-duodenal dyspepsia, 742 (92.3%); peptic ulceration, 424 (52.7%).

During the early months of the war dyspepsia of all types was most commonly found in Reservists, but it has now been observed to be equally prevalent among men called up in the "Army classes." The numbers naturally varied with the class of troops in the area at the time. However, dyspepsia does seem to be rare in Regulars. Although occupation was recorded in over half the cases it was of no great value because of the difficulty of classifying the results. In the majority the duration of symptoms was between two and five years. In only 10% did symptoms originate during service in the Army, and of these 80 patients 13 were neurotic in character. It is noteworthy that of the 91 Canadian patients 47 developed symptoms only after arrival in this country.

In order to make a diagnosis it is of the utmost importance that an accurate and detailed history taken in chronological sequence should be compiled. Of the special investigations radiographs were most valuable. The fractional test meal was of only partial value, as it was found that with patients who had experienced difficulty in swallowing the tube abnormal curves were recorded. The most extraordinary curves were obtained when an air-raid warning had been sounded during the test.

Table showing Details of Results

	Radiograph +	Radiograph −	No Radiograph	Totals	
British					
Ulcers:					
Duodenal ulcer	218	9	55	282	
Gastric ulcer	45	3	19	67	391
Pyloric ulcer	36			36	
Jejunal ulcer	6			6	
Gastro-duodenal dyspepsia:					
Pylorospasm	47			47	
Irritable stomach	27			27	
Hyperchlorhydria		32		32	
Achlorhydria		14		14	254
Gastritis and duodenitis	15	82	35	132	
Carcinoma pylori	1			1	
Duodenal diverticulum	1			1	
Reflex dyspepsia:					
Neurotic dyspepsia		11	29	40	
Pulmonary Tb.	5			5	
Ch. appendix	9			9	62
Colonic dyspepsia	5			5	
Cholecystitis	3			3	
Dominion Cases					
Ulcers:					
Duodenal ulcer	30			30	33
Gastric ulcer	3			3	
Gastro-duodenal dyspepsia:					
Cardiospasm	1			1	
Pylorospasm	3			3	
Hyperchlorhydria	14			14	36
Achlorhydria	3			3	
Gastritis or duodenitis		15		15	
Transferred (no diagnosis*)					28

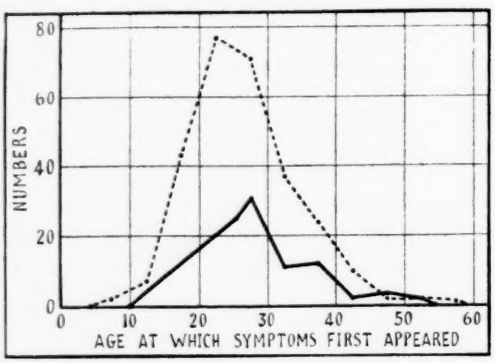
* These cases were transferred to E.M.S. hospitals before a definite diagnosis was made. The majority had the hyperchlorhydria type of dyspepsia.

Peptic Ulcer

In the British series there were 391 (55%) patients with definite evidence of peptic ulceration—a high figure, but one which would have been higher if it had been possible to make allowances for "missed ulcer" cases.

Age.—The ages at which symptoms were first noticed by the patients are recorded in the accompanying graph. It will be seen that the highest incidence for duodenal ulcer is between 20 and 30, and that the same is true of gastric ulcer, although the curve is flatter.

Past History.—In the patients with past histories were found 35 who had had acute haemorrhage, 26 of them by haematemesis. Nine with melaena was probably an underestimate, as although a story of "black stool" was common it was found very difficult to separate a pharmacological from a pathological cause, and only "proved cases" were included. Eighteen other cases were admitted to the hospital with acute haemorrhage. Thirty-four patients had had a perforated peptic ulcer in the past. Twenty-nine others had undergone a short-circuiting operation. Those patients who had had a gastro-enterostomy performed, and in whom symptoms returned, did not have relief for more than two years, although in only six did a jejunal ulcer develop. Twenty-nine cases had had appendicectomy for the relief of duodenal symptoms, but again relief was only for some two years.



Graph showing age of onset of symptoms. The broken line denotes duodenal ulcer; the continuous line, gastric ulcer.

Symptoms.—The timing of the onset of pain was unreliable as a diagnostic factor; for although in the case of gastric ulcer the pain usually came on within an hour of taking food, many patients with duodenal ulcer showed the same timing. In fact, the pain from a duodenal ulcer might come on at any period from one to three hours after food. Vomiting was almost universal, and in most cases of either gastric or duodenal ulcer gave partial or complete relief. Vomiting was far commoner in soldiers than in civilians.

Signs.—No data were available for actual weights, but the cases showed no evidence of serious undernutrition. Dental sepsis or the lack of teeth was not appreciable. Epigastric rigidity and tenderness, although usual, were not universal.

Gastro-duodenal Dyspepsia

"Pylorospasm" and "irritable stomach," purely radiological diagnoses, have been used here for want of more definite terms. The group included a certain number of missed ulcer cases, some cases of neurotic dyspepsias, and probably some of dyspepsia reflex from other organs, but in no instance was there definite evidence of the exciting cause. In the large group of gastritis or duodenitis vomiting was a very common symptom, and was out of proportion to the severity of the rest of the symptoms. In this group, also, there was slight loss of weight without evidence of serious wasting.

Reflex Dyspepsia

The reflex dyspepsia cases represent only those admitted to the gastric ward with a diagnosis of gastro-duodenal dyspepsia. The majority of cases of straightforward reflex dyspepsia never reached the gastric ward, but were treated in other wards as chest or abdominal cases, according to the primary diagnosis. Of the neurotic dyspepsia patients recorded in this period only 13 developed symptoms after the war began. They were not a conspicuous group.

Surgical Cases

Surgical cases are not included in the series, but 18 gastro-duodenal operations were performed during 1940. These included 13 for perforated ulcer, 3 partial gastrectomies, 1 gastro-enterostomy, and the closing of 1 gastro-enterostomy.

Disposal

Disposal still remains a major problem, for cases of general dyspepsia are often passed into the Army during a quiescent period; in the majority of cases, however, it is not long before the inevitable recurrence of symptoms begins, and as there can be no adequate provision of a gastric diet in the units the condition progresses. In the case of men with proved ulcers it is accepted that they are unfit for military service. In the case of officers it is often justifiable to retain them for home duty, when they can "live out" and get themselves a suitable diet. The practice of "living out" on a diet is also occasionally justifiable with an N.C.O. or other useful man.

In the remaining large group who have no ulcers the problem remains. Those with long-standing dyspepsia can be "boarded" out of the Army, but those with short histories generally find their way into Category C. Here they do practically no work of any value, and spend their time being "fully investigated" at each station to which they are posted. Many of these genuine dyspeptics are capable of useful civilian work, and in my opinion any of them who do not earn their keep in the Army should be "boarded" out of it, regardless of whether their symptoms are psychological or pathological in origin. Dyspepsia lends itself to malingering, but this in my experience is rare, although there is a certain amount of exaggeration of symptoms.

Summary

A review is given of the dyspeptic cases admitted to a military hospital during 1940 and of the notes of 804 patients seen between October, 1939, and December, 1940.

Peptic ulceration was present in 52.7% of all cases, and was spread equally between Reservists and the Army classes, but was rare in Regulars.

Duration of symptoms of dyspepsia was between two and five years, only 10% of patients developing symptoms while in the Army.

Of Canadian patients 50% developed symptoms after arriving in this country.

Of British cases 55% had peptic ulceration, the highest age incidence being between 20 and 30; 35 had had acute haemorrhage; 34 had perforated, and 29 had had a laparotomy performed.

Attention is drawn to the unreliability of the timing of the onset of pain as a diagnostic factor, and to the frequency of vomiting.

Neurotic dyspepsia was not particularly common.

Disposal is discussed.

C. V. Craster and H. Simon (*J. med. Soc. New Jersey*, 1941, **38**, 362) state that in 1940 in the City of Newark, N.J., out of 1,577 reported cases of pneumonia 1,123 (71%) were treated by chemotherapy alone. In 1,033 patients treated by sulphapyridine alone the fatality rate was 7.4%, in 86 cases treated by sulphathiazole alone the fatality was 7%. In 13 cases treated by serum alone the mortality was 7.7%, in 126 cases treated with sulphapyridine plus serum the fatality was 11.1%, and in 303 cases which received neither serum nor chemotherapy the mortality was 29.4%.

CRUSH INJURY WITH RENAL FAILURE AND RECOVERY

BY

GUY BLACKBURN, M.Chir., F.R.C.S.

Chief Assistant to a Surgical Unit, St. Bartholomew's Hospital; Surgeon to an Emergency Hospital

AND

W. W. KAY, M.Sc., M.B., F.I.C.

Assistant Pathologist at Archway Group Laboratory, London County Council; Chemical Pathologist to an Emergency Hospital

This paper gives an account of a case of crush injury with acute renal failure in which recovery occurred, although the injured limb had eventually to be amputated. An important part of the treatment was the use of sodium bicarbonate to restore the alkali reserve during the period of renal failure. The main clinical and biochemical data are summarized in the table and the chart.

Case History

As the result of a bomb explosion a man 58 years old lay for twelve hours with his left thigh crushed under fallen masonry. He remained fully conscious throughout this period and was able to converse with rescue workers. By the time he was released two superficial lacerations of the left hand and left eyebrow were giving him some pain, but his mind was still clear and the crushed limb painless.

On admission to the emergency hospital some twenty hours after the explosion the man's general condition was fair, without signs of shock. The apparent site of crushing extended from the level of the left great trochanter not more than four inches downwards, but there was no abrasion or demonstrable haematoma. The injured limb was anaesthetic and completely paralysed, and there was foot-drop. Good pulsation could be felt in all the main vessels of the limb. *X*-ray examination showed no injury to pelvis or femur. Simple dressings to the lacerations of the face and hand and a plaster back splint for the left foot were all that seemed necessary.

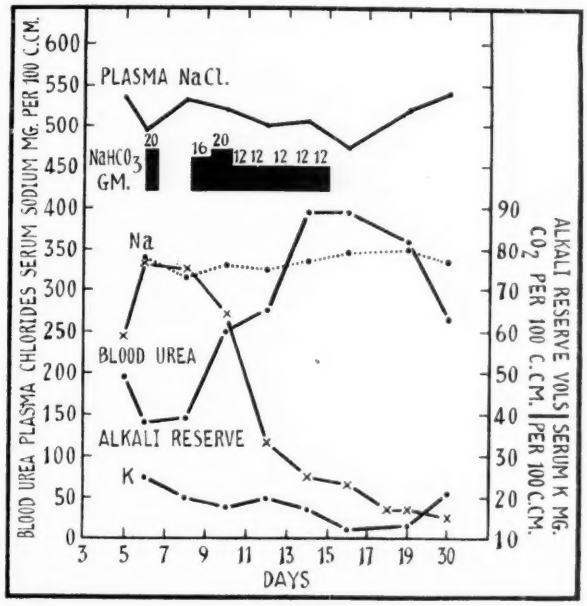


Chart of case.

During the next three days—i.e., the second, third, and fourth days of illness—there was little change in the patient's general condition, but his output of urine fell sharply, being 34 oz. in the third day and only 7 oz. in the fourth. The urine was blood-stained and had to be withdrawn by catheter on two occasions. In our experience of air-raid casualties, no matter what the site of injury, and even in the absence of any form of urinary obstruction, inability of the conscious patient to pass

Table summarizing the Main Clinical and Chemical Data

Day of Illness	General Condition, Treatment, etc.	Blood Pressure		Fluids		Urine		$NaHCO_3$ given (gm.)	Blood Urea (mg. per 100 c.cm.)	Urea Clearance % of normal	Plasma		Serum	
		Systolic (mm. Hg)	Diastolic (mm. Hg)	Intake (oz.)	Output (oz.)	Albumin	Blood, Casts, etc.				Alkali Reserve (vols. CO_2 per 100 c.cm.)	Chlorides (mg. NaCl per 100 c.cm.)	Sodium (mg. per 100 c.cm.)	Potassium (mg. per 100 c.cm.)
0	Left thigh crushed for 12 hours													
1	Admitted to E.M.S. Hospital. No shock. General condition fair													
2														
3	Catheterized twice; urine blood-stained			11	34	+	Blood-stained							
4				25	7	+	,,							
5	1,000 c.cm. 2% sodium bicarbonate given by rectal drip. Hb 90% (Haldane). Drowsy. Pain and oedema in limb	150	80	54	19			20	243		49	536		
6	General condition worse. 1,000 c.cm. normal saline I.V.	156	80	70	78	+	Granular casts		333		38	496	338	25
7	Improving. Eucortone given 5 × 1 c.cm.; 1,000 c.cm. 5% glucose in N/5 saline I.V.	195	95	60	68	Ft. tr.	,,							
8	Sodium bicarbonate by mouth, and extra salt in diet, started	158	80	72	71	+	,,	16	324		39	532	316	20·2
9	Hb 80%			74	97	Ft. tr.	No Hb; no casts	20		9·3				
10	Electrocardiogram normal			69	73			12	270		60	520	331	17·6
11		100	66	70	68			12						
12				98	86			12	115		65	500	326	19·3
13				97	80			12		49				
14	Sodium bicarbonate stopped. Slightly jaundiced. Serum bilirubin 1·2 mg./100 c.cm.			90	50			12	72		89	504	333	14·8
15		135	80	90	89									
16		130	72	84	60				63	57	89	472	348	11·8
17		136	78	88	62									
18				84	70					58				
19				86	72				32		82	520	349	13
20				79	76									
21				80	74									
30									27		63	540	332	20·4
71									22		63	516	336	18·4
103	Mid-thigh amputation	116	78											
120	Hb 94%	124	80						30	53				

urine voluntarily is not uncommon. This patient had no prostatic enlargement or urethral obstruction, and has passed urine without difficulty since the fourth day of his illness. On that day the main feature was a severe cough due to diffuse bronchitis, which cleared up after treatment with 10 grammes of sulphanilamide in the next forty-eight hours. It must be pointed out, however, that in view of the renal damage in this type of case it is generally desirable to avoid the use of sulphanilamide.

On the fifth day the injured limb was giving rise to much pain and showed deep oedema from the groin to the middle of the thigh. There were one or two vesicles in the skin below the apparent site of crushing. In other respects, however, the condition in the limb was unchanged, pulsation in the vessels being still apparently normal. This day's urinary output was 19 oz., which, together with evident dehydration, a blood urea of 234 mg. per 100 c.cm. (normal 25-40), a plasma alkali reserve of 49 volumes CO_2 per 100 c.cm. (normal 55-77), and plasma chlorides of 536 mg. per 100 c.cm. (normal 560-620), indicated severe impairment of renal function. Accordingly, 1,000 c.cm. of a 2 per cent. solution of sodium bicarbonate (equivalent to 20 grammes of $NaHCO_3$) was given by a rectal drip.

The next (sixth) day, however, the blood urea had risen to 333 mg., and the alkali reserve had fallen to 38 volumes CO_2 and the plasma chlorides to 496 mg. The urine contained albumin and granular casts, and the patient's general condition was obviously worse. Fluid administration by intravenous drip was therefore started, 1,000 c.cm. of normal saline, followed by 1,000 c.cm. of 5% glucose in one-fifth normal saline, being so given. In view of the low alkali reserve and the low plasma chloride content it would have been better to continue with normal saline until the chlorides were within normal limits, and to give sodium bicarbonate by mouth. The urinary output increased to 78 and 68 oz. on the sixth and seventh days respectively, and the patient seemed materially better. On the seventh day five injections of eucortone, each of 1 c.cm., were given.

On the eighth day, however, his blood urea was 324 mg. per 100 c.cm. and his alkali reserve still only 39 volumes CO_2. The condition of the lungs contraindicated the intravenous administration of fluids; the oral administration of sodium bicarbonate was therefore started in 4-gramme doses every four hours, being later reduced to 12 grammes a day, so that a total of 96 grammes was given in the course of the next seven days (see table and chart). In addition extra salt was given in his diet. The urinary output subsequently remained steady at 70 to 80 oz. a day, and progress in the clinical condition was steadily maintained. The blood urea fell gradually to normal and the alkali reserve rose to 89 volumes CO_2 per 100 c.cm. on the fourteenth day, when the sodium bicarbonate was stopped: after remaining high for some days it later became normal. The albumin and casts disappeared from the urine on the ninth day; and the blood pressure fell from 195 mm. Hg systolic and 95 mm. Hg diastolic on the seventh day to 135/80 mm. Hg on the fifteenth day. The degree of renal recovery is indicated by the rise in the urea-clearance value (calculated from twenty-four hours' output of urine) from 9.3% of normal average on the ninth day to 57% a week later. The present urea clearance, on a two-hour test, is 53% of normal average.

The changes in the plasma chlorides and serum sodium and potassium are shown in the table and chart. The chlorides fell early to subnormal levels and only slowly recovered. The serum sodium content has been normal throughout (325-350 mg. per 100 c.cm.), except for the value on the eighth day. The serum potassium content, however, was 25 mg. per 100 c.cm. on the sixth day (normal 16-22), and then fell steadily, becoming subnormal at 11.8 mg. on the sixteenth day before being stabilized at the normal level.

Mild jaundice—direct van den Bergh reaction weakly positive, serum bilirubin 1.2 mg. per 100 c.cm.—was apparent about the fourteenth day, but slowly cleared up without special treatment. As the patient had not had any blood transfusion, this was probably related to a low degree of liver damage associated with his toxic state.

The subsequent clinical course has not been uneventful. In the succeeding two months the injured limb showed little change, the oedema subsiding slowly, only to be followed by gross wasting. Pain in the limb was persistent and severe, both at rest and on passive movement, and only 15 degrees of flexion were obtained in the hip and knee in spite of physical treatment. Then two sloughing ulcers appeared, one over the head of the fibula and the other at the heel, and showed little sign of healing in three weeks. In addition the limb, still paralysed and painful, appeared once more to be endangering the patient's life. Accordingly, after a period when the patient was too ill to operate on, a mid-thigh amputation was successfully performed, almost fifteen weeks after the date of injury.

Pathological Report.—Of the tissues of the injured limb Dr. Joan M. Ross reports: "The sciatic nerve shows some fibrosis of the interstitial tissue with slight lymphocytic infiltration. There is slight scarring of the individual nerve bundles. The vessels show the changes usual in peripheral vascular degeneration. There is some medial degeneration with calcification in the artery and an associated atherosclerosis. The veins are normal. Sections from the vastus muscle show a multiplication of muscle nuclei and a development of young fibrous tissue among muscle fibres. The appearance is consistent with a healing crush injury." It seems probable that the degree of arterial degeneration was an important factor in determining the need for amputation.

The change in the man's outlook since his operation has been very striking and satisfactory. In contrast with the early weeks, when his general condition, the severe pain in his injured limb, and the loss of other members of his family in the raid made him depressed and miserable, he now discusses the prospect of returning home and getting about on an artificial limb, and rarely complains at all.

Summary

A case of crush injury with renal failure and recovery is described.

The administration of sodium bicarbonate to raise the dangerously low alkali reserve and the giving of sodium chloride played a decisive part in restoring renal function.

Amputation of the injured limb ultimately became necessary, and should be taken into account in similar cases in assessing prognosis.

We are indebted to Mr. Basil Hume for permission to publish this case, which has been under his care, and for his advice and criticism; and to Dr. E. G. L. Bywaters for seeing the patient.

HENRY LESTER INSTITUTE, SHANGHAI

The annual report for 1940 of the Henry Lester Institute of Medical Research, Shanghai, describes continued widespread activities, despite restrictions imposed by the war. Fifty-eight original papers were published during the year under review. Many cases of nutritional deficiency were investigated, chiefly beriberi and pellagra. During the latter part of the year a study was made of more than a hundred cases of ariboflavinosis. Various types of eye lesions were found; also mouth lesions and seborrhoeic dermatitis. The eye lesions responded most rapidly to riboflavin treatment, signs and symptoms beginning to recede within forty-eight hours. Several cases of pellagra were found to be suffering from fasciolopsis infection, while infestation with ascaris frequently, and with hookworm occasionally, was present in patients suffering from nutritional deficiency. The report states that evidence is being accumulated to test the theory that intestinal parasites may consume vitamins, especially the vitamin B groups, so that with a heavy infection and a low vitamin intake a condition of avitaminosis is produced in the host. Experiments were carried out on some four hundred children in a refugee camp to test the efficacy of soy-bean powder mixture. This substance contains soya bean powder, sugar, starch, sodium chloride, and calcium carbonate. After a period of four months it was found that children fed on this mixture showed greater growth and suffered less sickness than control children fed on ordinary diet.

THE BACTERIOLOGY OF AIR-RAID WOUNDS EXAMINED WITHIN FORTY-EIGHT HOURS OF INFLICTION

BY

E. T. C. SPOONER, M.A., M.R.C.S., L.R.C.P.

(Working for the Medical Research Council)

It was suggested by Stokes and Tytler (1918) and by Fleming and Porteous (1919) that in the war of 1914-18 pyogenic cocci, in particular *Streptococcus pyogenes*, entered wounds chiefly during their treatment in hospital. Miles *et al.* (1940) have found evidence of hospital infection of wounds during the present war.

In order to determine whether pathogenic bacteria are carried into wounds when they are inflicted it is necessary to examine the bacteriology of very early wounds. In Table I are shown the kinds of bacteria cultivated from 31 air-raid wounds examined at an Emergency Medical Service hospital during 1940. Through the kindness of the surgeons the material examined was collected at operation when the wounds were undergoing their first surgical cleansing. Pieces of the external wounds, wound tracks, and any foreign bodies were taken into sterile Petri dishes from the surgeons' forceps.

TABLE I.—*Bacteria obtained from* 31 *Air-raid Wounds within the First Forty-eight Hours of their Infliction.* (*Ps. pyocyanea and Proteus were absent in all cases.*)

Case No.	Str. pyogenes	Staphylococci		Bact. coli	Diphtheroid Bacilli	Aerobic Spore-bearing Bacilli	Non-haemolytic Streptococci	Str. viridans	Micrococci	Cl. welchii	Other Clostridia
		Coagulase +	Coagulase −								
1						+					
2	+		+								
3										+	
4					+	+			+		
5*			+								
6											
7									+		
8		+									
9*											
10			+			•		+			
11			+								
12*											
13*											
14				+						+	
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17				+		+	+		+		
18			+			+					
19	+	+	+	+	+	+		+		+	
20			+	+						+	
21						+				+	
22*		◣									
23			+								
24			+							+	
25			+								
26						-					
27									+		
28			+		+		+			+	+
29			+	+		+			+	+	
30			+				+				
31			+	+		+					
Total	2	2	13	6	3	10	3	2	6	8	1

* No bacteria obtained.

The bacterial population of an early wound is inconsiderable, and small swab samples often yield no bacteria. In order to test larger samples, pieces of excised tissue were either cut up with sterile scissors or ground with sterile glass fragments in a sterile glass hand-mill, and then inoculated into large tubes containing 30 c.cm. of broth, with or without added sterile blood, serum, or liquoid. (Liquoid is an anticoagulant which inhibits some of the bactericidal power of normal blood—see von Haebler and Miles (1938).) The necessary manipulation inevitably increased the risk of contamination from the air; stress is therefore not to be laid on the frequent occurrence of aerobic spore-bearing bacilli and coagulase-negative staphylococci (see Table I), although all possible precautions to prevent contamination were taken, short of working in a bacteria-free atmosphere. Fluid cultures were subsequently plated on to blood-agar plates, which were incubated aerobically and anaerobicaliy. Fragments of the wounds and wound tracks were also smeared direct on to blood-agar plates.

The frequency with which different kinds of bacteria were found among these wounds differed from that observed among older wounds in that pyogenic cocci were rarer while coagulase-negative staphylococci, aerobic spore-bearing bacilli, and *Clostridium welchii* were more common. Six of these early wounds yielded no bacteria. Pyogenic cocci were obtained from three, *Str. pyogenes* and coagulase-positive staphylococci together from one, and each separately from the other two. The wound which yielded both *Str. pyogenes* and coagulase-positive staphylococci was a small scalp wound on the head of a child whose tonsils were large and inflamed. A blood-agar plate culture from the wound eight hours after its infliction gave one colony of *Str. pyogenes*; a few days later Group A streptococci were abundant in both wound and throat. Unfortunately the streptococci from both sources were untypable, but from the evidence it is probable that the wound became infected from the patient's throat, possibly by way of her fingers.

Cl. welchii was found in 8 of the 31 wounds. In one case it produced enough gas and damage in a haematoma around a fractured tibia to lead to amputation. In a second case a piece of metal entered the chest wall, penetrated the abdomen, and lacerated the liver, from a piece of which, excised thirteen hours after injury, *Cl. welchii* was obtained. A pleural effusion subsequently developed in which *Cl. welchii* was present in large numbers, producing much gas. In the remaining 6 cases *Cl. welchii* gave no clinical evidence of its presence.

For comparison, Table II shows the figures for 29 limb wounds of more than five weeks' duration and 13 air-raid wounds of more than forty-eight hours' and less than three weeks' duration, all of which were treated by the closed-plaster method. Bacteria were much more plentiful in the wounds of these two groups than in the earlier wounds; the cultures from them were made on blood-agar plates, aerobic and anaerobic, and in cooked meat medium.

TABLE II

Kind of Bacteria	31 Air-raid Wounds less than 48 Hours Old	13 Plastered Wounds between 48 Hours and 3 Weeks Old	29 Plastered Wounds more than 5 Weeks Old
Str. pyogenes	2	5	20
Staphylococci:			
Coagulase +	2	9	19
Coagulase −	13	5	7
Bact. coli	6	4	15
Ps. pyocyanea	0	1	8
Proteus	0	2	7
Diphtheroid bacilli	3	10	21
Aerobic spore-bearing bacilli	10	2	5
Non-haemolytic and viridans streptococci	5	3	5
Micrococci	6	0	1
Cl. welchii	8	1	2
Other Clostridia	1	2	5
No bacteria	6	0	0

Discussion

Most of these early wounds were small ones which healed by first intention; their subsequent bacteriology was not followed. Comparison between small wounds which heal by first intention and larger open wounds treated by the closed-plaster method is fair only because there is no

obvious reason why different kinds of bacteria should be carried into them at the time of their infliction. Failure to isolate a given kind of bacterium from a wound is not conclusive proof that no bacteria of that kind were present; on the other hand, the methods of culture employed in this investigation are reasonably sensitive, and the most probable explanation of the failure to isolate pyogenic cocci from more than three wounds seems to be that they were not present in those from which they were not obtained.

Summary

Str. pyogenes and coagulase-positive staphylococci were each obtained from two wounds out of 31 early air-raid wounds examined within forty-eight hours of their infliction. *Cl. welchii* was obtained from 8, of which 6 showed no clinical evidence of its presence. Six of the wounds yielded no bacteria of any kind.

Thanks are due to the six surgeons who kindly allowed the collection of material in their operating theatres, and to Prof. L. P. Garrod for laboratory hospitality.

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Medical Memoranda

Narcolepsy

The following is a case of narcolepsy which showed a spontaneous remission of the specific sleep component of the syndrome in eighteen months, and in which the cataplectic component improved but still remains.

Case Report

The patient was a healthy married man, aged 40, who had no previous medical history, and whose personality did not present any evidence of psychopathy. In December, 1939, he was playing at cards under average circumstances when he unaccountably fell asleep. From that date until January, 1941, he became liable to diurnal naps, but, contrary to most recorded cases, he felt no prodromal desire to sleep. The attacks reached their greatest intensity about February, 1940, at which time they averaged three or four a day, each lasting from a few seconds to ten minutes. Simultaneously with the onset of this disability his sleep rhythm, formerly very regular, became disturbed, and though able to get off to sleep early; he would awake frequently, but found no difficulty in going off once again. His dreams, formerly infrequent and neutral, now became very frequent and universally unpleasant, especially those of long-past incidents. The quality of his sleep had no effect on the subsequent day's attacks. Boredom and monotony, intense artificial light as when playing cards, a huge meal, would tend to induce an attack. He never fell to the ground, and in fact was always sitting when the attack occurred, except on one occasion while standing at a lecture, when the losing of his balance woke him up. After an attack he had a feeling of well-being. There was no preknowledge of an impending attack. There were no paraesthesiae, visual or auditory phenomena, or hypnagogic hallucinations. The depth of sleep was "dead asleep," and the waking was instantaneous and unaccompanied by any features of abnormal sensation, behaviour, or thought.

Approximately one month after the above attacks had been established he began to notice cataplectic phenomena. The first of these was a blurring vision "like as if you were to squint," and referable to diplopia. Accompanying this was a sensation which was unpleasant "because it made it awkward to speak," and which was described as a "pulling" of the lower jaw between the angles and the chin. The sensation was analogous to that produced by simulating a risus sardonicus. A very short period after the foregoing sensation in the jaw he would "experience a momentary shock" in "all my joints," "just as if you were startled by nearly being run over." The ocular and mandibular sensations were not momentary, and would last "as long as the emotion" provoking them. The provocative emotion was in the majority of instances that of mirth. But certain states of tension, such as "standing in front of an officer" or after "making a difficult billiard shot," had also induced an attack.

The above cataplectic syndrome followed the narcoleptic syndrome in its general progress, but the manifestations of the two syndromes were completely independent, and were dissimilarly provoked and displayed with reference to time. The narcoleptic syndrome had little, if any, effect on his behaviour or personality; but on account of his cataplexy, whereas formerly he had been a man given to mirth and known for his repertoire of amusing, especially salacious, stories, he gradually had to control this tendency until it was completely inhibited. The telling of these anecdotes would invariably precipitate an attack at the climax of the joke. Matinal attacks of hypnagogic cataplexy had occurred in which he had woken up "as in a trance," "continuing with my dream but unable to move until I wilfully woke my body up." There was no history of amnesic episodes. During the period under review he gained 7 lb. and became relatively impotent. Desire remained, but he got a poor erection, and achieved an orgasm with ejaculation with great difficulty. There were no headaches or epistaxis. The patient was of average build, above average intelligence, and free from family history of similar complaints. He had a history of head injury during childhood, when he had had concussion on two occasions. There was no immediate antecedent period of physical or psychic stress. Radiographs of the skull were negative, as were serological tests. Erythrocytes numbered 6,500,000 per c.mm.

The narcoleptic syndrome had made a complete remission by December, 1940, but the cataplectic syndrome, though considerably less, has persisted to date and has not apparently improved with benzedrine.

Discussion

In considering the clinical manifestations of the narcoleptic syndrome, this case may be said to show the majority of the classical features of the illness. To the psychiatrist the most interesting feature was its lack of effect on the patient's personality.

With reference to the relation between the narcoleptic syndrome and epilepsy, it has been pointed out by Daniels (1934) that the dissimilarities outweigh the similarities. Nevertheless, it appears reasonable to assume that the two patterns of neural response overlap somewhat. A much more interesting problem of overlapping is involved when we consider the problem of sleep inclination to certain phenomena of hysteria. At the onset of a fugue it is extremely frequent for the patient to be seized with an overwhelming desire to sleep, and this feeling he usually proceeds to gratify. On awakening—perhaps within an hour, or, if in the evening, some eight hours later—he remains in his disorientated state until, maybe, he comes for treatment. It is unusual for the patient to relate or to know of this fact, and in consequence I can find little reference to it in the literature. The amnesic period of the fugue usually appears to include a short period prior to the sleepiness. Under hypnosis, however, the patient relates all these circumstances. In one patient, who remained in a state of partial disorientation for many weeks, there were recurrent attacks of sleepiness under emotional stress, which all disappeared following treatment.

The neuropsychiatric ground-pattern of hysteria still awaits elucidation, and in a separate paper I have advanced evidence to show a connecting link in the case of the anxiety attack with known lesions in the region of the third ventricle. Here again in the topic under discussion is a symptom (a feature also in many hysterical fugues) which occurs in a setting the organicity of which is not open to doubt and whose site of production appears to be in the neighbourhood of the third ventricle. Finally, it appears justifiable to refer to the disturbance of nocturnal sleep rhythm and impotence, which are two cardinal features in involutional melancholia and which occur in the syndrome here recorded.

H. A. Palmer, M.D.,
Major, R.A.M.C.

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Reviews

MAGIC AND SCIENCE

A History of Magic and Experimental Science. Vols. V and VI. By Lynn Thorndike, Professor of History, Columbia University. The Sixteenth Century History of Science Society Publications, New Series IV. (Vol. V, pp. 696; Vol. VI, pp. 766. 66s. 6d. net two volumes.) New York: Columbia University Press. 1941.

The fifth and sixth volumes of Prof. Lynn Thorndike's *History of Magic and Experimental Science* contain more than 1,400 pages, the index cites some 1,700 topics or names of things and more than 3,000 names of persons. These volumes are concerned with the sixteenth century. Science is defined by Prof. Thorndike as "systematical and ordered knowledge, a consistent body of truth, attained through sense perception, introspection, and reflection, aided by mechanical and mathematical instruments, independently of faith, emotion, prejudice, appetite, pleasure, and the like." Magic, on the other hand, "was a systematized and ordered marvel-believing and marvel-working, a consistent body of error, attained through sense perception, introspection, reflection, and dreaming, influenced by faith, emotion, appetite, and pleasure, marked by unwarranted associations of ideas, without adequate means of correcting error and without proper standards of measurement." A logician might doubt whether if a body of error were *wholly* self-consistent it could properly be described as error, but, for practical purposes, the antithesis may stand.

The field of human thought and speculation covered by Prof. Thorndike is so vast (he does not include pure mathematics, but astronomy and medicine are within his connotation of experimental science) that a book planned to include some reference to all the significant writers cannot avoid a certain dryness. Judicial astrology, for instance, treated as a game (one recalls the classical instance of Colonel Mannering) the rules of which were much more complicated than those of chess might well be as interesting as cross-word puzzles. But unless the reader (unlike the present reviewer) knows the rules and how they were modified by different players, succinct accounts of the conclusions reached by A, B, and C seem not amusing and ingenious nonsense but just plain and dull nonsense. The same remark applies to other departments of magic.

A medical reviewer inevitably turns to the chapters describing men famous in medical history or the history of the sciences fundamental or ancillary to medicine. These volumes naturally include such illustrious names as Leonardo da Vinci, Vesalius, and Fracastoro. In reading Prof. Thorndike's accounts of these revered investigators, and comparing them with those of contemporary scientific historians who were primarily interested or trained in the subject-matter of their historical researches, one is conscious of a change of emphasis. The scientific writer emphasizes the intimations or realizations of what we have come to regard as important truths and ignores or passes lightly over imperfections or errors which link the pioneer with his contemporaries. The pure historian, more interested emotionally in the men and their *milieu* than in the object of their scientific inquiries, does just the reverse. Prof. Thorndike is much more concerned to point out the imperfections of da Vinci and the others, how much they were indebted to predecessors, how often they shared superstitious beliefs with less gifted contemporaries, than to expatiate on their highest qualities. He does not obey Steerforth's exhortation to David Copperfield—"Think of me at my best."

Prof. Thorndike in a footnote (vol. v, p. 493) comments with some asperity on the neglect of Meunier, Prof. W. C. Wright, and Prof. and Mrs. Singer to associate Fracastoro's treatise on sympathy and antipathy with his book on contagion. "Such is the way," he writes, "that we 'gloss over our Augustine' and refuse to view the past as it really was." To the scientist, the fact that Fracastoro did have an idea of *contagium vivum*, of a biological process, wholly unlike the idea of contagion present in the minds of his predecessors (to whom contagion was not a process perpetually reborn in a chain of biological events, but rather akin to the passage of a note from tuning-fork to tuning-fork) was Fracastoro's peculiar merit. It was natural to turn a blind eye to his imperfections, to forget, for instance, that he hesitated to push his theory to its logical conclusion and did not think it adequate to explain the pandemic diffusion of syphilis. This is, perhaps, only another way of saying that the two classes of writer had different objects. If we wish to know which of our predecessors had reached truths which later experience has proved to be important, men of science whose historical studies are parerga are better guides than professional historians. If we wish to know what the general state of knowledge and belief in a bygone age really was, the trained historian will be a better guide. If time permits we should read both. Prof. Thorndike's view of sixteenth-century culture is a cure for regarding that period as a golden age. It almost, but not quite, reconciles us to the age in which we live.

CHROMATOGRAPHY

Principles and Practice of Chromatography. By Prof. L. Zechmeister and Dr. L. Cholnoky. Translated from the second and enlarged German edition by A. L. Bacharach, M.A., F.I.C., and F. A. Robinson, M.Sc., F.I.C. With a foreword by Prof. I. M. Heilbron, F.R.S. (Pp. 362. 25s. net.) London: Chapman and Hall, Ltd. 1941.

The technique of chromatography was first devised by a Russian botanist—Tswett—of whom nothing has been heard since the last war. His work was published in various scientific journals between the years 1899 and 1912. It received recognition in this country in 1924 with some slight development, but only when the relation between vitamin A and carotenoids became apparent was the technique fully appreciated. Then followed a flood of work both in this country and on the Continent which could only have been made possible by chromatography.

In its simplest form the process is this. A test tube with perforated end is fused to a short length of narrow glass tubing, plugged at the lower end with cotton-wool, and evenly packed with some adsorbent such as dry calcium carbonate or aluminium oxide to a depth of four to five inches, leaving an inch or two of the test tube unfilled at the top. A solution of a mixture of nearly related substances is allowed to filter through it, hastened by suction, and the various substances are adsorbed at different levels of the column. The whole column is pushed out of the test tube by a rod passing through the glass tubing and cut into sections corresponding to the different layers of substances visible in it. These are eluted separately and the different components of the original solution thereby separated. The process may be designated fractional adsorption.

The first part of Zechmeister and Cholnoky's book on this subject deals with the principles involved in the process, the relation between chemical constitution and behaviour of a substance on the chromatogram. The actual method is described in great detail with many practical hints for the successful carrying out of the delicate technique.

Numerous modifications in apparatus, adsorbents, and solvents for adaptation to particular problems based on the authors' wide experience are given. The second part of the book deals with results already obtained in the separation and purification of substances of very many different types: chlorophylls, carotenoids, anthocyanins, azo-dyes, and even colourless substances such as terpenes, aromatic hydrocarbons, and sterols, many of which disclose their presence in the chromatogram by fluorescence when subjected to illumination by the quartz mercury vapour lamp. There is a bibliography of some 600 references (the contents of which are not always correctly quoted) and 74 figures, of which 24 are excellent reproductions of photographs of chromatograms, others of photographs of apparatus, others clear pen-and-ink diagrams.

The book will be received with delight by everyone using this technique and by others who have not already used it but may be stimulated to try to apply it to their own particular problems. The translators are to be congratulated in that it is difficult to realize that this is indeed a translation.

A LEPER'S LIFE

Who Walk Alone: The Life of a Leper. By Perry Burgess, President of the American Leprosy Foundation. (Pp. 318; illustrated. 12s. 6d. net.) London: J. M. Dent and Sons, Ltd. 1941.

In spite of the continuous research that leprologists all over the world are giving to the nature and control of leprosy, much still remains obscure. Great devotion in dealing with it has been shown by doctors and nurses, sometimes at the cost of their own lives. Dr. Perry Burgess, the author of *Who Walk Alone*, has been National Director of the American Committee for the Eradication of Leprosy since 1925. He conceived the idea of laying bare the soul and all the human emotions of a leper by writing the life history of a United States soldier who became infected during the Spanish-American war in the Philippines. Over thirty American soldiers developed leprosy years after their return from that campaign.

The book is a soul-stirring tale, highly dramatic, poignant, and powerful in its appeal for a closer understanding of the subject of leprosy. It is cleverly written and can be read with profit by medical men and laymen alike. One follows the life story with breathless interest to the very end and lays down the volume with a great feeling of gratitude to the author for having presented his subject in such a moving way. From the book we gather that there are 3,000,000 lepers in the world, and the most heavily affected areas are in East and South Asia, particularly China and India, Malaya, Africa, and parts of South America. The British Empire Leprosy Relief Association is the counterpart of the American committee, which is directed by Dr. Burgess.

Notes on Books

John Wright and Sons, Ltd., of Bristol now publish an eighteenth edition (making the 215th thousand) of *Warwick and Tunstall's First Aid to the Injured and Sick*, which has been a favourite ambulance handbook for forty years. Its preparation was entrusted to Major Norman Hammer, to whom first aid for air-raid casualties has been a principal interest for the past five years. Both text and figures show evidence of full revision; Part II, forming three-quarters of the book, has in fact been largely rewritten. Major Hammer explains in the preface that his aim has been to preserve the characteristic features of the work, bearing in mind that this is a handbook of *general* first aid; at the same time he tries to show how the application of general principles should be modified, and procedures simplified, according to the special needs of wartime first aid both to casualties in the Services and to victims of air bombing. The price of the book is now 3s. 6d., and it will no doubt have a ready sale.

Dr. DONALD PATERSON has extensively revised his *Sick Children: Diagnosis and Treatment* for its fourth edition. A great improvement has been achieved by transferring a mass of detail on dried milk and proprietary foods to the appendix, so that the whole subject of infant feeding now collected into three chapters is treated in a more balanced fashion than hitherto, with a satisfactory emphasis on normal breast-feeding. The chapters on nephritis, nervous diseases, blood diseases, and the endocrines have been revised, and that on tuberculosis is completely new. All these changes have improved what was already recognized as an essentially practical guide to paediatrics of a solid and reliable standard. But there is little indication that the child has a mind as well as a body, and the relative lack of any detailed discussion of psychological disturbances of childhood is not in accord with modern developments. This edition is larger than its predecessor, and contains more illustrations and eight new plates. It is published at 15s. by Cassell and Company, Ltd.

Preparations and Appliances

DEVICE FOR WASHING CONTAMINATED EYES

Dr. J. L. BARFORD (Redhill, Surrey) writes:

I enclose a drawing of an exceedingly simple device, "cribbed" from the bottles in which petrol-lighter fluid is sold, which enables every carrier of a Service water-bottle—especially, of course, stretcher-party personnel—to have ready at hand the means for washing out eyes contaminated by liquid "mustard," etc.

It consists of an ordinary cork (*c*), of about the same size as that of the water bottle, through which pass (*a*) a short length of rubber tubing of about ordinary douche-can diameter, (*b*) a very small glass tube (but this can be dispensed with, a hole being merely bored through the cork). The length of rubber tube is so short that it cannot injure the eye, and the water bottle is conveniently steadied against the patient's head.

This spare cork is best kept in a small envelope of calico or such-like, with press-button fastener, tied on the outside of the water bottle. The cost is about 2d.

ELECTRIC HEATERS IN SURFACE SHELTERS

An interesting type of electrical heater is being fixed in the Liverpool communal surface shelters at the instance of the city electrical engineer. It consists of a concrete box or cover containing a heating element. The box is arranged to bolt, where possible, to the outside shelter wall and sit over an air brick, thus ensuring a fresh air supply in addition to warmth. The concrete cover provides a cheap and effective protection for the heating unit and it operates at a low temperature and can safely be touched. The loading of the heating element, which may be of any type, can be varied to suit requirements. Loadings of 200, 500, and 1,000 watts are arranged in a 12-in. box, and of 2,000 watts in a 24-in. box. The system of protected wiring employs a homogeneous tough rubber. Cement is moulded round the cables where they drop down to the heaters. This method of wiring has the advantage of simplicity, cheapness, and protection from all except malicious and wilful damage. The concrete heater box complete with element costs £1 13s. 6d. in the 12-in. and £2 15s. 6d. in the 24-inch size.

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HEAD INJURIES IN MOTOR-CYCLISTS

During the first two years of war the number of road fatalities in this island amounted to little short of 20,000. In all varieties of road users, except adult pedestrians, the statistics published by the Royal Society for the Prevention of Accidents show a steady increase in the numbers killed, and in motor-cyclists the increase last winter was 50% as compared with the previous winter. For the last four months of 1940 on an average five motor-cyclists were killed each day; the distribution between civilians on the one hand and the fighting Forces on the other was approximately equal. As to the number of motor-cyclists temporarily or permanently incapacitated by accidents which are not fatal, no figures are available, but there can be little doubt that there is a considerable drain of man-power from this cause. Before this war the Ministry of Transport returns showed approximately twenty-five motor-cyclists injured for each one killed.

The only effective way of preventing accidents is to encourage careful driving, and this is particularly necessary in motor-cyclists, for it seems that the motor-cycle gives a more exhilarating sensation of speed than any other motor vehicle, not excluding the aeroplane, and in collisions the rider is quite unprotected. Motor-cyclists are for the most part young men, a group to whom caution on the roads does not come easily. The measures so far taken to instruct people in the use of the road have doubtless done good, but they have not prevented an appalling and ever-increasing waste of life, and there is a strong case for a further inquiry on scientific lines to collect information as to the amount of incapacity which results from motor-cycle accidents, to study means of alleviation and prevention of accidents, and to revise the methods of educating motor-cyclists in road sense and the use of their machines.

In this issue of the *Journal* Prof. Hugh Cairns reports some investigations on motor-cycle accidents. He finds that head injury was present in over 90% of a large series of fatal accidents. In some cases the head injury was not severe enough to cause death, but multiple injuries were present in two-thirds of the cases, and the combination of two or more injuries each of which by itself would be non-fatal can suffice to cause death. If the head injury could be alleviated a considerable number of these cases would not be fatal. The Army has taken an important step in this direction in providing its motor-cyclists with crash helmets of the type used by dirt-track riders before the war. It is too early yet to assess accurately the value of this protection, and it may be difficult ever to obtain properly controlled statistics, but the cases reported by Cairns are encouraging. He describes seven cases and mentions a further eight in which Army motor-cyclists were wearing crash helmets at the time of the accident. In several of these cases the violence to the head was sufficient to produce gross fracture of the crash helmet, but in all cases the damage to the skull and brain was slight. Further experience may establish the need for making the use of a crash helmet compulsory not only for soldiers on duty but also for members of the other fighting Services, soldiers on leave, and civilians. Meanwhile there is doubtless work to be done in improving the types of crash helmet in use, and this is a problem which we may be sure is engaging attention.

Cairns gives figures to show that fractures of the lower limb are particularly prone to occur in motor-cycle accidents, and the number of such cases requiring prolonged treatment is likely to increase if lives are saved by means of the crash helmet. Protection of the legs from injury is a much more difficult problem than that of head protection, since it would entail alteration of the design of motor-cycles and the addition of more weight to the machine, a step which might not find favour with manufacturers or with those who wish to attain high speed on the road. But there are already in existence some types of machine which provide leg protection, and the problem of converting other types should not be insoluble if the case for it can be clearly established and if sufficient pressure can be brought to bear on the manufacturers. This is a matter in which surgeons should take an active part: it is more effective to prevent or alleviate limb fractures than to treat them well. But no amount of protection to head or limbs will prevent fatalities when accidents take place at high speed, so in the last analysis the best preventive measure of all is thorough education in careful use of the road.

MEDICAL STATISTICS IN WARTIME

On September 17 Sir Wilson Jameson said that "at the close of this second summer of the war we had every reason to be thankful for the health of the country," but added that "local authorities and the medical profession must remain on the alert." Sir Wilson briefly reviewed good and less good features of our experience: among the former, the saving of young lives through evacuation and a decline of cerebrospinal fever; among the latter, the prevalence of paratyphoid infections and some increase of mortality from tuberculosis among young women.

So that local authorities and our profession may remain effectively on the alert they should be well informed, and they are less well informed than during the war of 1914-18, when the publications of the General Register Office were continued. Now unofficial students of mortality rates are vouchsafed hardly any information. No complete data for any year later than 1938 have been published. In the last war, as in this, the death rate from tuberculosis increased among young women, and various explanations were suggested—for example, the increased employment of young women in factories. The late T. H. C. Stevenson showed this explanation to be inadequate because an unfavourable trend in this age group antedated the time when large-scale employment could have been a factor; and, after the war, the trend continued to be unfavourable for

several years and has been the subject of research by Bradford Hill, D'Arcy Hart and Payling Wright, and others. Although fresh light has been thrown on the subject by these investigations, the general problem is still unsolved. The conditions of the present war differ in important ways from those of 1914-18 and a new field of investigation is opened; it cannot be cultivated unless workers are allowed to enter it.

It has been suggested that if detailed information were made public it would be of military value to the enemy. Two hundred years ago the House of Lords rejected a Census Bill on that account; exact knowledge of populations was regarded as a military secret by some Continental nations much later. But the enemy now has all our official publications down to and probably including those relating to 1938. Without any more recent information, by the use of common sense and elementary statistical methods he can estimate, and no doubt has estimated, the numbers living in Great Britain in all age groups from 5 to, say, 65 with an accuracy sufficient for any conceivable military purpose. There is, however, a more rational objection to the use of death rates on males. It has long been the practice to give specific rates of mortality in terms of the civilian population. Before 1914 the exclusion of the armed Forces was of trivial importance, but in 1914-18 it deprived the rates on males of any value as public health indices, because, *inter alia*, the denominator of the rate had lost a large proportion of the physically fittest men, so that rates of mortality were unreasonably high. It was necessary to use rates on women alone as indices. This objection is still valid. Unless *all* deaths (by causes and in age groups) are related to the relevant age groups of *all* males observed in Great Britain the rates on males will be of little value. There is no obvious reason why the mortality rates of women should not be as informative as in 1914-18 provided that the deaths of women drafted into the fighting Services are included in numerators and the whole populations taken as denominators.

Wholly apart from the fact that secrecy prevents discussion which might throw light on aetiology, it inevitably encourages rumour and exaggeration. One of the evils of war is unavoidable secrecy; it is important not to increase this evil by needless mystery. The Annual Reports of the General Register Office were not studied by as many medical men as we could wish, but they were, directly and indirectly, the most potent educational instruments forged by the central Government. We know of no adequate reason why the medical profession should be deprived for the duration of the war of means of testing the success of its work.

SPREAD OF ACUTE INTRAPERITONEAL EFFUSIONS

The spread of acute intraperitoneal effusions is of immediate and practical interest to all abdominal surgeons, and a knowledge of the natural history of such effusions has important bearings upon the questions of diagnosis, operative treatment, and post-operative complications. The experimental investigation of the various intraperitoneal watersheds and clinical observation at operation have together provided most of the accurate data upon the subject. Recently Mitchell[1] has carried out further experimental work and has put forward some new evidence and views relating to the spread of intraperitoneal effusions from the region of the right subhepatic space. When the body is in the supine position there are three main abdominal barriers which act as watersheds. The first is the longitudinal barrier formed by the bodies of the lumbar vertebrae, covered by the great vessels and the mesentery of the small intestine. This divides the peritoneal cavity below the level of the transverse colon into right and left infracolic spaces, but, owing to the obliquity of the mesentery of the small intestine, these are not symmetrical. The second barrier is the upper transverse one formed by the transverse colon and mesocolon. The third is the lower transverse one formed by the posterior part of the pelvic brim, covered by its muscles and great vessels. The supracolic space can be further divided into the right and left subphrenic spaces, the right subhepatic space (Morison's pouch), and the left subhepatic space or lesser sac. The other principal spaces are the right and left infracolic and the pelvic space.

The generally accepted routes of spread of fluid from a perforated duodenal ulcer, a perforated posterior-wall gastric ulcer, an anterior-wall gastric ulcer near the pylorus, or from a perforated gall-bladder, are as follows. The fluid fills the lesser sac or the right subhepatic pouch and spreads upwards to the right subphrenic space or extends along the right paracolic gutter. It then passes into the pelvis, and when enough has collected here it wells up into either infracolic space, or it may pass into the left paracolic gutter and reach the perisplenic space. Mitchell's experiments were carried out on the bodies of stillborn infants, and fine barium emulsion was injected into the peritoneal cavity through a small perforation on the posterior wall of the stomach. Radiographic examinations were carried out at various stages of the injection, and at the completion of this the findings were checked by dissection. As a result of these experiments it was found that the spread of intraperitoneal barium emulsion did not correspond to the description which has already been given and which is the generally accepted one. Mitchell found that fluid collected in the right subhepatic space, and then overflowed into the antero-internal angle of the right subphrenic space, usually through the quadrangular interval bounded by the quadrate lobe of the liver, the gall-bladder, the falciform ligament, and the transverse colon. At this stage, however, the main part of the right subphrenic space was not invaded, but the fluid spread downwards and to the right in front of the transverse colon and around the margin of the great omentum, and so reached the right infracolic space. From here some of the fluid flowed over the ascending colon into the lower part of the right paracolic gutter, and some of this then extended upwards and entered the right subphrenic space. Part of the fluid from the right infracolic space passed in front of the ileo-caecal junction, entered the left infracolic space, spread throughout this, and extended upwards into the left subphrenic space and downwards into the pelvis. The pelvis may also be invaded by a trickle which runs round the lower margin of the caecum from the paracolic gutter. But it was noteworthy in these experiments, which were carried out in the recumbent position, that the pelvis remained free from fluid at a relatively late period.

From these new experiments three principal facts emerge: first, that there is no direct spread of fluid from the right subhepatic space to the right paracolic gutter; secondly, that the pelvis is chiefly filled by fluid overflowing from

[1] *Brit. J. Surg.*, 1940, **28**, 291.

the infracolic spaces; and, thirdly, that there is little evidence that fluid spreads from the pelvis along the left paracolic gutter to the left subphrenic space. It is not, however, any criticism of these careful observations to point out that experimental conditions are very different from those which may be present in the living human being with an acute inflammatory intraperitoneal exudate. Under clinical conditions the patient is not always or entirely supine; he may not remain quite motionless; abdominal rigidity may be present; and intestinal distension or inhibition may be an important modifying factor. All these factors may play a part in determining the spread of intraperitoneal fluid, especially from the region of the right subhepatic pouch, and experimental observations cannot be translated too readily into clinical dogmatism. But these new views should prove a stimulus to further clinical observation by all who operate on acute abdominal conditions.

AN AMERICAN DOCTOR ON THE WAR

Dr. David Cheever, President of the American Association of Surgeons, in his presidential address[1] on "Mars and Aesculapius," delivered at White Sulphur Springs on April 28, paid tribute to the fact that 83% of the Fellows of the Association volunteered for the last war, and gave details of the part played by the American medical profession in general. On the subject of the present war it is worth quoting his remarks: "With our weight tilting the scale the war was won, but the peace, it seems, was lost, for now, scarcely a score of years later, we stand again at the gates of Armageddon. Our idealism in undertaking to ensure the future of democracy by waging a war to end war has become a mockery. The same enemy confronts us, his purpose far more sinister, his strength vastly augmented by the devotion of the whole wealth and power of a great nation for the sole purpose of ruthless aggressions, his resources multiplied by those of the peace-loving, terrorized, conquered peoples; his mailed fist supported by allied ghouls whose nostrils tell them—falsely, to be sure—of the expected kill. More dangerous is he because of his strength, but also because of the doctrine with which he has inoculated the people—a doctrine at once ludicrous, absurd, but dreadful in its evil intent, of a superior race predestined by the Creator to prosper at the expense of all other peoples. This foe is bending all the agencies of the physico-chemical and physiologic sciences to his purpose, and showers death in its most ghastly forms on man, and destruction on the monuments of his civilization to a degree which is callously designed to involve a nation in its totality if it refuses to submit. The unarmed, the defenceless, the weak, the aged, the young of either sex have no privilege of even partial exemption, but rather suffer the more because they have not the strength for self-defence. And, standing rock-like against this monstrous, reckless, merciless destroyer stands the English-speaking island Empire and her overseas daughters, shorn by enemy subjugation of all her allies save one, making us to consider whether a precarious freedom can be enjoyed alone in case of her defeat." He then goes on to discuss, without pronouncing on their validity, the theories of the opportunity for medical development in war as opposed to peace, and from the historical and scientific point of view traces them from their origins. His epilogue ends thus: "Again Britain and her daughter nations, bleeding but with heads unbowed, stand against this monstrous thing. Again America is moving to her side; again the weight of her power will press down the scale pan wherein lie liberty and justice. When the victory shall be won, let our care be that mankind shall also win the peace by lavishing on its nurture something of the same energy, treasure, and self-sacrifice which is poured into the lap of Mars." These words of Dr. Cheever's come as a high encouragement to us on this side of the Atlantic.

[1] *Ann. Surg.*, 1941, **113**, 881.

EUMYDRIN FOR PYLORIC STENOSIS

Dr. Helen Mackay has recently[1] given a detailed analysis of the treatment of forty consecutive cases of congenital hypertrophic pyloric stenosis with eumydrin (atropine-methyl nitrate), and it would seem a suitable time to consider whether or not this method should replace surgery for this condition. All but two of the series were treated as in-patients, the diagnosis in every case included the palpation of a thickened pyloric "tumour," and the average stay in hospital was between three and four weeks. Of the forty patients, five died during the treatment, one of enteritis and pneumonia some weeks after going home, and a seventh died also after discharge. On the basis of five deaths the mortality is given as 12.5%. Actually thirty-one babies were "cured" by eumydrin alone and a fourth by operation when eumydrin had proved unsuccessful. The general management and feeding of these babies has undergone some evolution in the light of experience, and it is more profitable to summarize Dr. Mackay's considered recommendations than to set out the reasons for and against gastric lavage, extra fluid, frequent feeds, and so on.

The routine suggested is as follows. Unless obviously dehydrated the baby is given fluid by mouth only, amounting to 3 oz. per lb. body weight (inclusive of foods), in the first twenty-four hours, and thereafter only such extra water as he will take readily. Breast-feeding should be continued if possible, three-hourly for six feeds in the twenty-four hours being best, with a sweetened condensed milk diluted 1 in 5 by volume to give 20 calories per ounce as a substitute. Full caloric requirements should be reached within two or three days of starting treatment. If feeds are vomited they are not repeated. Freshly prepared eumydrin (1 in 10,000) not more than a week old is given half an hour before each feed, beginning with 0.5 to 1 c.cm. and increasing by 0.5 c.cm. each feed up to 2.5 or 3.0 c.cm., or even more if necessary. No gastric lavage is recommended. If abdominal distension occurs the dosage of the drug and the food intake are reduced. If the treatment fails the drug is omitted for twenty-four hours before operation. After a varying period, probably two to three weeks, a gradual reduction in the dose of eumydrin can be started and the drug eventually discontinued. This routine could be followed by any intelligent mother at home after a period of instruction, possibly as an in-patient with the baby for a limited period. For it is on the question of prolonged stay in hospital that the drug treatment of pyloric stenosis offers greater dangers than operation. Dr. Mackay claims a mortality of 11.5% for eumydrin treatment of 122 cases published in this country, including a series of forty cases with five deaths recently reported by R. H. Dobbs,[2] and sets against this a general mortality for surgically treated cases of about 25%, hinting that this is achieved only by special teamwork and may be more in areas where surgeons experienced in the operation are not available. This is hardly fair, for Dr. Mackay's results appear to have been achieved by "anxious work" (her own words) by the sisters and nurses of the hospital, and,

[1] *Arch. Dis. Childh.*, 1941, **16**, 1.
[2] *Lancet*, 1941, **1**, 661.

on the other hand, closely co-operating "teams" have published results from surgery which are better than the eumydrin series, such as those from St. Bartholomew's Hospital with one death in fifty consecutive infants, as reported by C. F. Harris and G. Keynes.[3] In these columns recently D. Levy[4] reported a series of 100 consecutive operations on breast-fed infants with pyloric stenosis without a single death. Out of forty-six bottle-fed infants operated on five died. Levy insists that statistics of results from medical and surgical treatment cannot be compared in the absence of full information on the method of feeding.

The crux of the whole matter is summed up by Dr. Mackay in the statement: "It is notorious that in cases of pyloric stenosis treated in hospital the biggest cause of mortality is often infection acquired in hospital." Hence the claims of surgery over drug treatment to shorten the period of stay in hospital have strong adherents. There would seem to be two ways to move on from the present position if operation is to be avoided. The first is for improved hospital construction and routine, whereby infection can be avoided. What, for example, are the results of treating pyloric stenosis going to be in the new building at the Hospital for Sick Children, Great Ormond Street? The second is for a wholesale test of Dr. Mackay's suggested routine with all the babies as out-patients for most, if not all, of the time required for treatment. In this connexion a rather less vague end-point for the use of eumydrin is desirable. Wartime conditions may make for some delay before further progress is achieved. At all events the use of eumydrin is now clearly established and the details for best results are plain. There is no need for sterile controversy. Advocates of surgery on the one hand and of eumydrin on the other can go on working at their respective methods until time proves what is really best in all the circumstances for the young infant suffering from pyloric stenosis.

SURGICAL TREATMENT OF PARKINSONISM

We are apt to forget the trials of peace amid the trials of war, and naturally exert ourselves to solve the immediate acute medical problems which confront us. But the peacetime diseases still remain to be treated, and of these paralysis agitans is surely a disability which calls for all possible help, even if this is only palliative. In the past treatment has been medical, the stand-by being atropine and allied drugs. It is recommended in enormous doses, alone and with other antispasmodic drugs. As in other conditions which resist treatment the therapeutic agents are legion, the vogue for the newer ones usually being short-lived. There is little reliable evidence that the Bulgarian treatment is better than any other; the reports of carefully controlled experiments have shown its efficacy to be identical with that of the more usual tincture of belladonna. Putnam has for some years been trying to improve the distressing tremor of paralysis agitans by surgical methods. Three years ago[5] he reported that section of the anterior column of the spinal cord, which effectively diminishes athetoid movements, did not affect the Parkinsonian tremor in five cases. Puusepp[6] cut the column of Burdach, with improvement of the tremor, and Bucy and Case[7] extirpated the motor and premotor cortex on the opposite side with some relief of the tremor. Putnam[8] has extended his work, and now reports on the effect of excision of appropriate areas of the motor cortex and of section of the pyramidal tracts of the spinal cord. He selected for operation ten patients with very severe disabling unilateral tremor. He found that, although the results of cortical excision were disappointing, pyramidal section in the cord produced considerable relief of symptoms, and supports his claim with electromyograms, photography of the degree of disablement before and after operation, and by samples of handwriting. Of course a spastic hemiplegia results from the pyramidal section, but the degree of spasticity depends on the completeness of the section, and unfortunately the improvement in the tremor also seems to be related to the amount of pyramidal involvement; but, as Putnam observes, it is much less disabling to have a mildly spastic arm which can be used for limited movement than to have continuous rhythmic movements which cannot be controlled. He records that his patients were grateful for the relief obtained. Putnam also points out that his results are at variance with the results of physiological experiments, notably those of Aring and Fulton[9]; but he considers that Wilson's conception[10]—that the tremor of paralysis agitans is due to dysfunction of extrapyramidal pathways—may be incorrect. He thinks that the abnormal rhythmic discharge is conveyed to the muscles by the pyramidal tracts. Whatever the physiology of the condition, bilateral pyramidal section will indeed be heroic treatment, but little short of this would be required to relieve the majority of the severe examples of paralysis agitans encountered in hospital practice, for unilateral severe Parkinsonism is uncommon.

[3] *St. Bart's Hosp. Rep.*, 1937, **70**, 43.
[4] *British Medical Journal*, 1941, **1**, 963.
[5] *Arch. Neurol. Psychiat.*, Chicago, 1938, **39**, 258.
[6] *Chirurg. Neuropathol. Kruger*, 1932, **1**, 416.
[7] *Arch. Neurol. Psychiat.*, Chicago, 1939, **41**, 721.
[8] Ibid., 1940, **44**, 950.
[9] *Arch. Neurol. Psychiat.*, Chicago, 1936, **35**, 439.
[10] *Modern Problems in Neurology*, by S. A. K. Wilson, 1928, p. 120, London.

A WEEK-END OF WAR MEDICINE

During the last week-end of August, at a military hospital (writes a correspondent), there gathered a dozen near-by R.M.O.s for a postgraduate refresher course. For a long time the need for closer liaison with the more "forward" officers has been felt: at the same time the desirability of sharing the immense clinical material of the hospital with others not so fortunately placed was evident. On Saturday afternoon the O.C. welcomed the "students" and spoke of the work of a general hospital. The experience of the hospital at home and abroad was illustrated from records. The startling difference in the type of admission on active service and in quiescent periods gave much food for thought. "Every hospital," he added, "should be a centre of medical culture, and now that so many of the staff of teaching hospitals were doing duty in military hospitals these should not any longer be exceptions." This week-end course, he hoped, would be only a beginning. The physician then led off the clinical rounds. Several "short" and two "long" cases were shown—a streptococcal fever (with a digression on recent work in dust infections) and a case of multiple nutritional deficiencies. The dispenser demonstrated the B.L.B. oxygen apparatus. The surgeon had a large variety of common and uncommon complaints in his wards, and, as luck would have it, the first case of gas gangrene the hospital had admitted in home territory. The radiologist produced one film after another from a seemingly never-ending store. Most interesting was a series of films of cases of pulmonary tuberculosis from the earliest lesion to advanced fibrocaseous pulmonary tuberculosis with cavitation. Sunday morning was devoted to the psychological problems that bulk so large in regimental practice. The physician discussed the modern integration of hypothalamus, emotions, autonomic system, endocrines, and cerebral cortex. The mechanism of psychosomatic disorders was illustrated from the physiology of the stomach and clinical

work on peptic ulcer. The psychiatrist dealt with neurosis in soldiers, the chronic problems and the more acute ones, such as occurred, for example, at Dunkirk. He showed two cases—a conversion hysteria and, as postscript, an imbecile. As a fitting conclusion the assembled medical officers did the progressive matrix intelligence tests on themselves, and the absence of mental deficiency was a matter for mutual congratulation. In the afternoon the specialists took the field: there was a demonstration of scabies, impetigo, ringworm, and the newer methods of treatment (non-fatty bases and sulphanilamide ointments) that were being tried. The importance of personal hygiene was again and again emphasized. The ophthalmologist's subject was "Eyes, injuries to, and bodies, foreign, in." He also dealt with gas burns and the albucide treatment. Finally, in an open discussion, the talk, as seems inevitable when R.A.M.C. officers meet, was mostly of the problems of mental health in a nation mobilized for total war and the immense responsibility resting on the Corps. The O.C., in a closing greeting, extended the freedom of the hospital to all the medical officers and expressed the appreciation of the hospital staff for their never-failing co-operation.

THE CHEMISTRY OF THYROID DISEASES

The popularity of the basal metabolic rate in the investigation of thyroid disorders during the last few years has perhaps had the effect of limiting interest in other chemical abnormalities in such conditions. The results of certain liver-function tests have already been discussed here,[1] but there are in addition many observations on creatine, lipid, and iodine metabolism which may finally become of clinical importance. Creatinuria has been long recognized as a feature of hyperthyroidism, and there is also a correlation between creatinine excretion and the basal metabolic rate (Palmer, Means, and Gamble[2]). Recent reports, however, suggest that the incidence of creatinuria among normal subjects is greater than at first supposed (Hobson[3]) and is perhaps sufficient to reduce the value of the estimation as a diagnostic procedure. The relation between the basal metabolic rate and creatinine excretion in hyperthyroidism is also not close enough to encourage further work on these lines at the moment (Bröchner-Mörtensen and Möller[4]). An inverse relation between blood fat content and thyroid activity has been apparent since the work of Denis.[5] Either the total fat or the cholesterol determination has been used, and both the fall in hyperthyroidism and the rise in myxoedema have been found of value by some workers (Nicholls and Perlzweig,[6] Hurxthal,[7] and Green[8]). While these procedures are often useful as confirmatory tests, the wide range of values causes a certain amount of overlapping in the two conditions. Iodine metabolism, while obviously of fundamental importance in view of the structure of thyroxine and of the therapeutic effects of iodine, has so far contributed little to diagnosis. This is no doubt because of the great chemical difficulties in estimating very minute amounts of iodine variously combined. Elmer's work[9] is outstanding in this field, and it appears from this that the total blood iodine (8-20 microgrammes per 100 c.cm.) is of little clinical value. Blood thyroxine has been investigated in a few cases, but large volumes of blood are required and the estimation is tedious and not entirely specific. It is certain that technical improvements in this field would have an enormous influence on the whole question of hyperthyroidism, the very definition of which is at present a matter of opinion. If the word is to have an exact meaning it should mean an increased amount of thyroid hormone in the blood, and when the direct demonstration of this is possible as a routine a major advance will have been made.

[1] *British Medical Journal*, 1941, **2**, 166.
[2] *J. biol. Chem.*, 1914, **19**, 239.
[3] *Biochem. J.*, 1939, **33**, 1425.
[4] *Acta med. scand.*, 1939, **102**, 417.
[5] *J. biol. Chem.*, 1917, **29**, 93.
[6] *J. clin. Invest.*, 1928, **5**, 195.
[7] *Arch. intern. Med.*, 1934, **53**, 825.
[8] Ibid., 1941, **67**, 114.
[9] *Iodine Metabolism and Thyroid Function*, Oxford University Press, 1938, London.

COMMITTEE ON NURSING SERVICES

Early in 1939 it seemed that at last some radical improvements would be made in the terms and conditions of service of nurses and, with a view to better recruitment, in the status of the profession in the public eye. The Interdepartmental Committee on Nursing Services, of which Lord Athlone was chairman, had recommended fundamental changes, and the Government showed every sign of being prepared to act upon many of the recommendations. Unhappily for the nursing profession and for those outside it who have for years striven against the placid acceptance by the public of almost nineteenth-century conditions of service for nurses, the outbreak of war put a stop to any considered action on the lines of the committee's report. The Royal College of Nursing, however, has now shown that it is not content to await the end of the war before preparing the ground for these and other much-needed reforms, and has set up a committee to consider ways and means of carrying out some of the recommendations and to plan for the future. Actually the decision to establish this committee was taken earlier this year, but it was not then thought expedient to do more than appoint a small subcommittee to examine the most urgent problem—the control of the assistant nurse. The first report of this subcommittee will soon be ready, but in the meantime the College has decided to proceed to the larger task of examining all other problems and of preparing for post-war reconstruction. Half the main committee, of which Lord Horder is chairman, are to be members of the Royal College of Nursing; the other half are to be representatives from the British Medical Association, the Medical Women's Federation, the British Hospitals Association, the National Association of Local Government Officers, the County Councils Association, the Society of Medical Officers of Health, the County and County Borough Hospital Matrons' Association, and the Association of Hospital Matrons. The Council of the B.M.A. at its last meeting accepted the College's invitation to be represented, and appointed Dame Janet Campbell, M.D. The many schemes already put forward for the improvement of nurses' training and conditions of service will be examined by the committee, whose final recommendations should represent an agreed policy acceptable to all parties, not least to the nurses themselves.

We have received a stencilled document entitled "A Report on the Possible Relationship between Electrical Equipment and the Incidence of Anterior Poliomyelitis," by James G. Woolley, with a foreword by Harlan Shoemaker, M.D. This report contains statistical evidence which leads the author to believe that the incidence of poliomyelitis has an aetiological relation to the lay-out of high-tension electricity in the City of Los Angeles. The author's presentation of the data is not very easy to follow, but his researches will no doubt be carefully scrutinized by American experts familiar with local conditions.

WAR CONDITIONS AND THE MENTAL HEALTH OF THE CHILD

BY

FRANK BODMAN, M.D.

Deputy Director, Bristol Child Guidance Clinic

Last February Miss Dunsdon, our psychologist, made a survey of 8,000 Bristol school children to assess the incidence of strain following air raids. Her findings were that about 4% of this large sample of the school population showed some signs of strain, either purely psychological or else psychosomatic. Among the psychological symptoms noted were general nervousness, trembling, crying, and aggressive behaviour. Among the psychosomatic symptoms were headaches, anorexia, indigestion, enuresis, soiling, pallor, and epistaxis.

Of the 300 children showing signs of strain 120 suffered from frankly psychological symptoms. These occurred twice as often in the 5-7 group as in the senior school group (aged 11-14). About 170 children suffered from psychosomatic disorders. These were especially frequent in the oldest group of senior school children, and this form of anxiety disguised as physical symptoms was the characteristic reaction of the 11-14 group.

Taking both types of reaction together, Miss Dunsdon found that the younger children felt the strain and lack of sleep more readily than the older ones, who have developed more control and can repress their feelings to conform with adult standards with greater success. Half the cases occurred in the infant group (5-7), another third in the junior group (8-10), and less than a quarter in the senior school children.

This survey concerned the general school population at a time when severe raids were occurring fairly often. I thought, however, that it would be a matter of interest to try to find out how children who had suffered special stress were reacting after some months had elapsed and during a period of freedom from raids. I have therefore carried out a special survey, lasting a fortnight, of a group of children who were exposed to an air raid of maximum severity. This group were the in-patients of the Children's Hospital in Bristol at a time when the hospital was damaged by several high-explosive bombs and the children were evacuated to another hospital at the height of the raid, under particularly terrifying circumstances.

On the night in question there were 54 in-patients, ranging in age from 2 months to 12 years. This was the occasion of the second severe raid on Bristol. Shortly after nine o'clock the hospital was damaged by several high-explosive bombs. The warden of the sector immediately ran to the hospital at which I was on duty, a quarter of a mile away, where a squad of Regular soldiers were standing by to help deal with incendiaries. On receiving the message the soldiers immediately dashed off in an Army lorry to the Children's Hospital. The scene on arrival was extraordinary. Soldiers were crunching through a litter of broken glass, fallen plaster, and blown-in black-out material, picking children out of cots and beds and, tucking them under their arms, running down the steps and dumping them pell-mell into the lorry. The hospital was in darkness, and the only light came from the fires raging in the city below. A very heavy barrage was in progress and heavy high-explosive bombs continued to fall quite close to the hospital. Most of the children were transferred by lorry to my hospital; a few babies were carried in the arms of the soldiers the quarter of a mile, while spent fragments of "flak" were buzzing down freely. All 54 children were evacuated without a scratch, and the only serious casualty among the nursing staff was the night sister, who had been cut by glass.

Here, then, was a really traumatic incident. I still feel a little frightened myself when I recall it. I have tried in this survey to find out how this incident has been integrated in the minds of the various children.

I do not know whether many readers have undertaken a follow-up of cases in a bombed town; but the search on which I embarked rather light-heartedly proved more than usually difficult. On one occasion the address I had been given proved to be a heap of rubble, and in many cases evacuation, convalescence, and the absence of both parents on war work necessitated many extra visits and a good deal of correspondence. I consider myself fortunate, therefore, that I have been able to trace 51 out of the 54 children.

Of these 51 children 44 are alive; 7 had died—3 of cerebrospinal fever, 1 of diphtheria, and 3 of the illnesses for which they were originally admitted. Of the 44 survivors 5 still have symptoms which can be directly attributed to their experiences on the night of the raid—a percentage of 11. This is barely three times the number found six months ago by Miss Dunsdon in her survey of the school population in general.

Parents reported that on their arrival home from hospital, generally about a week or a fortnight after the incident, 27 children (61%) showed signs of distress. But the majority were stable in a period ranging from three weeks to two months. "He sweated freely when the sirens went the first week he was home"; "She was normal in three weeks"; "She was frightened for nearly two months."

Perhaps the best example of the normal process of digestion of the experience was that of a little girl aged 3 years. At first on her return home Janet woke frightened by the sirens and wouldn't say a word to the grown-ups about what had happened. But at the end of three weeks she was overheard telling her dolls about how the bombs fell and how the windows fell on us; "a man came and took me away to another hospital in a car." After this discussion of the incident with her dolls she was much steadier; she sleeps through the sirens, and only wakes when the barrage is particularly heavy. She has no other nervous symptoms now.

All the children showing persistent signs of strain are between the ages of 1 and 5½; this confirms Miss Dunsdon's finding that the youngest age group is the most vulnerable.

The youngest child is now 17 months old. She showed evidence of the time-lag in the development of symptoms that we have already reported in adults, and began to have screaming fits and night terrors three to four weeks after her discharge from hospital. After another severe raid, in which her home was damaged, she was evacuated with her mother to South Wales, but is still very nervous, and suffers from night terrors, although she can tolerate the noise of engines.

The second child, aged 15 months at the time of the raid, is probably a mental defective. Though she has returned home to a raid-free district, her mother considers her much more nervous since she came home from Bristol.

The third child, aged 2 at the time of the raid, has also gone back home to a relatively quiet area. He was very excited occasionally on his return home, still does not like to hear the sirens, and generally cries out and yells every time he sees a gas-mask. He is an only child.

The fourth child, aged 3 at the time of the raid, is the youngest of three children. Her mother, who was suffering from what she described as a "nervous breakdown," described the child as coming home with "shattered nerves." She screams at night, talks and shouts in her sleep, cries when spoken to, picks sores on her fingers and face, suffers from diurnal and nocturnal enuresis, and soils herself. Even allowing for the mother's tendency to project her own symptoms on her child, I think this was the most severe case I saw.

The fifth child was a boy aged 5 at the time of the raid. Though very much better on his return to his country home, he is still afraid of the dark and suffers from night terrors if there

is no light in his bedroom. Bombs have been dropped near his home and the windows broken since his return.

It is interesting to note that four of these five children have persistent symptoms in spite of the fact that they have returned home to relatively quiet areas.

Taking the remaining children who recovered, I have attempted to analyse the progressive assimilation of the incident in the different age groups. Children under the age of 1 cannot express their feelings by talking and are unable to move of their own accord to a place of safety. Of the 10 under 1 year of age 4 died—3 of infections unfortunately contracted within a fortnight of the raid. Conditions after the raid multiplied the chances of infection, and, though strict isolation was practised, it is perhaps significant that every child who developed infection died, and this 100% mortality suggests a lowered resistance in these young infants. Of the 6 survivors 4 never showed any signs of upset, one was a little upset at first, and the oldest, aged 10 months, still suffers from night terrors.

The next natural group appears to be from the age of 1 to 3. There were 15 of these, one of whom died of meningitis. Of these children 4 showed no sign of strain at any time; 2 still suffer from persistent symptoms. The most common reaction in this group was that to the noise of sirens, or to any noise: "She jumped at the least little noise"; "He knew what the sirens meant and was terribly anxious"; "She put her finger to her lips when the sirens went and seemed to listen, and cried." This reaction soon disappeared in spite of many subsequent alerts. These children are of an age to walk, and some of them ran for a safe person or place when the sirens went. The earliest example of this was seen at 1 year 11 months: "He came after me when the sirens went"; "He runs to anybody on hearing bangs"; said "Bombs, Mummy," or "Is it all clear?"; "He asked to go to shelter when the sirens went." Another reaction observed in this group was a failure to recognize the parents on return home. "She didn't know us when she came out" (1/11). "He didn't know me—he was a bit strange" (1/11).

It is not until the 3-year-olds are reached that any attempt is made by the child to describe the incident. At first the account is disjointed and fragmentary.

Joyce (3/0) said: "They took me away; they wouldn't let Daddy come."

David (3/5): "The black-out came down on me; the soldiers took me away in the car."

Elizabeth (4/1): "The ceiling came down on my bed. I had a ride with the soldiers in a car."

George (4/5) talked about the nurses running up and down the stairs and the bombs dropping.

Brian (7/5) told his parents how his hair was full of powdered glass, how the nurses showed the soldiers where to go, and how the soldiers carried him out.

In this group of children, aged 3 to 7 years (13 cases), there was a slightly earlier phase noted when the child attempted to reject or deny the experience.

Graham (2/5), though talking well when he went into hospital, would for some time say nothing but "No" when he came home.

Sylvia (3/0) never talked about the raid.

Janet (3/0) wouldn't say a word at first, and then talked to her dolls as I have described.

Patricia (6/5) never spoke of her own accord of the raid.

Gladys (8/0), who was choreic, never spoke of the raid. She was described by the ward sister as "too awfully normal," but for some time would not play with the other children or join in the ward games. She is quite happy and bright now.

But in the next group of children, aged 7 to 11 (8 cases), there was a tendency to accept the raid as an adventure.

Brian (7/5) treated the raid and subsequent bombings as a joke, but he was upset when evacuated to Cornwall. He had an unlucky billet with a very rough coarse-mouthed foster-father, and was eventually rescued by his father. On his return home he was shy, and cried when spoken to.

Robert (11/0) thought it was thrilling; he was very excitable and rather manic. He wrote a vivid description of his adventures to an aunt, who forwarded the letter to Mr. Churchill, and the Prime Minister's letter of acknowledgment is now a treasured family possession.

In the last group of children (11 to 12½), of whom there were 4 cases, there is an example of a sense of responsibility for the younger ones.

David (11/6) would not leave his ward until all the other children had been evacuated. He asked the nurses to allow him to help them in carrying children out. He paid for his self-control with enuresis after subsequent air raids, and his mother noticed that in severe raids in the following months the only sign of nervousness was a tendency to talk all the time he was in the shelter.

Another point of interest is the reaction of these children to subsequent incidents, when their homes or hospitals were again hit. Leaving out the youngest child, who had been born in an air raid, there were 8 of these.

Ruth (4/0), after the original raid, was evacuated from my hospital when it was severely damaged by a bomb, and a month after her return home she saw the house on the opposite side of the road blown sky-high in a daylight raid. Yet I found her putting her dolls to bed on the front door-step opposite the ruins, quite friendly and charming. She had a stable father, leader of a first-aid party.

Elizabeth (4/1), in a subsequent raid in another town, talked of her previous experience.

Patricia (7/0), five months after the first incident, was in a hospital which was damaged by a bomb, but was quite cool and showed no signs of upset.

Diana (9/1) was cool in a raid at home when her mother and two sisters broke down, and was bright and happy in a raid when another hospital to which she had been moved was hit.

Doreen (10/5) went "hysterical" in the shelter at home in the next raid and was shaken by her disgusted father, a naval petty officer. She was evacuated to Devonshire a month later, settled down happily, and is looking very well.

Robert (11/0), the enthusiastic letter-writer already referred to, was transferred to another hospital in a town which was bombed two months later. The windows were blown in. Two months afterwards, in yet another hospital, the windows were again blown in by a near miss. Beyond being rather excited, he was not upset.

Grace (12/10) two months after her return home found the house wrecked when the family emerged from their Anderson shelter. But she is sleeping well and is looking better than ever she did.

Bernard (12/0) told his father how the ceiling, plaster, and glass came down on his bed: he thought he would be buried alive. In a subsequent raid he heard bombs whistling down, and dived under the bed so quickly that he cut his head open and was the only casualty. But he sleeps well now and, though he is an epileptic, has had no recent fits.

Summary

Of the children exposed to a major aid raid 61% showed signs of strain for a period of between three weeks and two months.

After seven months 11% of children still show persistent symptoms.

Persistent symptoms have not occurred in children under 1 year or over 5½ years of age.

The incident is assimilated in varying degrees according to the stage of development of the child's personality.

The earliest reaction is that to sirens and noise in general. In the walking child there is an attempt to run to safety. Later, in the talking child, there is an attempt to reject formulation of the experience, followed by an effort at describing or rehearsing

the incident, the description becoming more elaborate as the child is more mature. About the age of 7½ the tendency is for the child to accept the incident as an adventure. Finally, about 11½ a sense of responsibility for others appears.

The reaction to subsequent raids was on the whole remarkably slight. Out of 8 children who had severe later experiences only 2 showed pardonable anxiety, and they made rapid adjustment.

The most striking finding of this survey is the extraordinary toughness of the child, and his flexibility in adapting to potentially threatening situations.

I am indebted to my house-surgeon, Dr. Monica Hawkins, for tracing records while these children were in my hospital; and to Miss Pierson, the almoner of the Children's Hospital, and Miss Taylor of the Royal Hospital, Bristol, for help in tracing addresses.

THE NATION'S DENTAL SERVICES

PLANNING BY STUDENTS

A joint committee of dental students representing five London hospitals—Guy's, King's College, the London, the National Dental Hospital, and the Royal Dental Hospital—in co-operation with some dental schools in the Provinces, has prepared a memorandum[1] on the nation's dental services. It is a forthright document, especially in its analysis of dentistry as a career and its criticism of methods of teaching.

"Deplorable" Status of Dentists

The public status of the dental practitioner is declared to be deplorably low. The widespread ignorance of the nature of dental disease, and especially of its effect on systemic conditions, is described as appalling. Little more than £5,000 a year has been spent (by the Dental Board) on educating the ignorant public in the elementary principles of oral hygiene; some educational work is also done by the Central Council for Health Education, which the memorandum erroneously describes as a "department of the British Medical Association." The majority of the population have never been reached by dental propaganda, except by way of advertisements for proprietary toothpastes. Fear of the dentist's chair is still a factor to be reckoned with, and is considered by the students to be a serious reflection on dental technique. They believe that more research should be devoted to painless dentistry, but the responsibility lies very largely with the individual practitioner to cause his patient as little discomfort as possible while not impairing the efficiency of his work.

Dental attention at child welfare clinics impresses the students as inadequate, though varying from county to county. The school dental service is a valuable effort, but only about 65% of the children receive attention, and for these the facilities are too irregular to permit any degree of thoroughness. The fundamental fault in the school dental service is the lack of sound training for dental surgeons in child dentistry, including orthodontics. The gap between school-leaving age and the age of eligibility—19—for the additional benefits scheme under national health insurance is one of the greatest of the shortcomings, and the insurance scheme itself has many drawbacks. Incidentally the students praise the dental clinics which in London and elsewhere set out to meet the needs of the poorer sections of the community. These are often referred to as commercial practices, for although the charges are cut to a minimum they are run as extremely profitable concerns. "We have watched the work of some of these clinics and have been favourably impressed by the quality of the work they turn out." About seventy large firms employ part-time or whole-time dental surgeons for their workpeople.

Dentistry as a Career

Only a comparatively small proportion of the population can afford to pay the full fees of private practitioners, but it is in this field that the great majority of dental surgeons work. The *Dentists Register*, with between 14,000 and 15,000 dental surgeons and dentists, has remained almost stationary for the last fifteen years, and with the gradual dropping out of the "Dentists 1921" it is unlikely to show any marked increase in the near future. During the years from 1927 to 1937 the *Medical Register* showed an increase of 6,572, the *Dentists Register* an increase of only 204. In the United Kingdom there are four doctors to every dentist, but the *Register of Students*, 1938-9, shows the ratio of medical to dental students to be nearer six to one. Of those on the *Dentists Register* about 55% hold a diploma (L.D.S.); less than 2% hold the B.D.S., and less than 1% a higher qualification. The training is long and expensive. An initial outlay of £1,000 is necessary for education and subsistence, and from £500 to £2,000 for the purchase of a practice. The provision of more numerous and valuable scholarships and bursaries is urged.

In peacetime an average of only 24 women qualify annually, but school dentistry offers great scope for women, who also stand a better chance than men as candidates for posts of dental surgeons to maternity and child welfare centres.

Dental Education

Criticism of the methods of teaching is on the grounds of lack of modern apparatus, inadequate knowledge of modern methods on the part of the teachers, a tendency to ignore backward students, and insufficient supervision and aid from professional dental mechanics. Co-operation with manufacturers of dental goods, most of whom are willing to demonstrate their own techniques to students, is discouraged. A serious shortage of trained whole-time teachers is said to exist at all stages of professional training and at nearly all hospitals. Use is made as a supplementary provision of honorary visiting surgeons and demonstrators, but this is unsatisfactory for several reasons, one being that the student is often "taught two conflicting methods for the same operation on two consecutive days."

The examination system, while its advantage is conceded, has the drawback that the setting of a limited syllabus in certain subjects leaves to the teacher the responsibility of extending the syllabus; also that in marking examination results no account is taken of the student's hospital record.

It is also complained that the education of medical students in dental matters is neglected. The general practitioner of medicine is declared to have little or no knowledge of dental conditions and is rarely in a position to advise his patients to obtain dental treatment until some acute trouble arises. "Further, their lack of training in the administration of anaesthetics for dental operations renders them often almost a menace when called upon to perform this task." Again: "A medical house-surgeon is often expected to extract teeth with no previous experience of the operation whatsoever, and even no real knowledge of the anatomy of the parts concerned." It is considered that there are advantages in taking medical qualifications, however low, as well as dental qualifications. The dental surgeon can then speak to the medical man on equal terms.

Dentistry in Wartime

The work undertaken by the dental services with the Forces is mainly "conditioning"—that is, rendering a man dentally fit without impairing his masticatory powers. The tendency is to maintain Service personnel by depleting civilian practice, with the result that a position is arising in which there are not enough dentists to treat the civilian population or to maintain the standard of school dentistry. "Eighty per cent. of the younger members of the profession will have been absorbed into the Forces by the end of this year in order to change the neglected mouths of soldiers into examples of first-class conservative technique. But the school dental service, attempting to cater for the adults of to-morrow, has to pay as large a toll as any other branch of the profession to satisfy the demands of the War Office." It is considered that it would have been better to establish the wartime organization of the profession so as to provide only the most essential treatment for the Forces while doing everything possible to overcome the difficulties of treating the fluctuating evacuated populations and to ensure the finest service for children and adolescents. In one West of England town where, before the war, one dentist working half a day a week

[1] Issued by the Planning Committee of Dental Students, Royal Dental Hospital of London, Leicester Square, W.C.2. (1s.)

was able to cope with all demands, a bombed-out dental surgeon has now settled, and is seeing 200 patients a week.

Up to now the problem of calling up the "Dentist 1921" has not arisen, all such men being over military age. It is owing to the inclusion of these men that the average age of dentists is so high; 65% of those on the *Register* are aged between 45 and 65.

The memorandum urges that all these questions should be the subject of a conference to which a wide representation of the dental profession, of its ancillaries, of health services in general, of approved societies, and of Government Departments should be called.

Local News

SCOTLAND

Scottish Sanitary Congress

The sixty-sixth annual congress of the Royal Sanitary Association of Scotland was held recently in Glasgow under the presidency of Mr. Frank Preston, who in his opening address urged that plans should be prepared now to meet the transitional period from war to peace, and that planning should be of three types—national, regional, and local. In a paper on precautionary measures against infectious diseases Dr. Frank Main, M.O.H. for Perth, emphasized the need for a drastic overhaul of the procedure of exclusion from school for varying periods of all contacts of infectious disease. He said that many thousands of school attendances were lost every year by exclusion of contacts which could be saved without the slightest danger of an increase in the incidence of infectious diseases. Under the present rules a contact of mumps must stay away from school for twenty-one days, while a child with a severe cold might, and usually did, remain at school and infect the whole class. Colonel Sir Alexander Russell, I.M.S. (ret.), of the Department of Health for Scotland, stressed the importance of immunization against diphtheria, pointing out that pre-school children were by far the most susceptible to this infection. Out of an estimated child population in Scotland of 1,124,500 only some 600,000, or about 53%, had so far been immunized against diphtheria. It seemed wrong that, in the name of liberty of the individual, parents could veto the protection of their children against disease and, untimely death.

Neurosurgical Unit for Glasgow and the West

Meetings have recently taken place between representatives of the Glasgow Corporation hospitals and of voluntary hospitals to discuss a plan for establishing a single unit for neurosurgical treatment of patients from Glasgow and the West of Scotland. Agreement upon general principles has been reached, and the Department of Health for Scotland has undertaken to place at the disposal of the area a number of beds and facilities for operative surgery at its hospital at Killearn, to which both civilian and casualty patients would be admitted. The Health Committee of the Glasgow Corporation has adopted a resolution recommending approval of this plan as a temporary arrangement during wartime.

The September issue of *Industrial Welfare and Personnel Management*, the journal of the Industrial Welfare Society (14, Hobart Place, S.W.1, price 1s.), includes articles on "Lighting for the Older Worker," by E. B. Sawyer, manager of the Lighting Service Bureau, and on "Foot Wear and Tear," by W. Sayle Creer, M.Ch.Orth., F.R.C.S., who suggests that firms should establish foot clinics needing only very simple essential equipment and a chiropodist (full- or part-time, depending on the number of workers). "In the minds of medical men who have experience of the value of the chiropodist there is no doubt at all that the establishment of foot clinics in industry is something not to be discussed as a possibility or as a luxury but as a necessity and one which quickly repays the money spent on it."

Correspondence

Voluntary Hospitals

Sir,—Sir Frederick Menzies asks: "What are the particular virtues of the voluntary hospital system which are conspicuous by their absence in the municipal hospital system?" Without attempting a comprehensive answer to this question, I would like to mention a few of these virtues.

1. The control of the work of the hospital by a medical committee, consisting of all the members of the senior staff, with a chairman elected by them and re-elected and changed at frequent intervals, no medical superintendent taking full final responsibility.
2. Recommendation for election to the medical staff, of all grades, by the medical committee, of the future colleagues.
3. Part-time visiting senior staff, individually having sole and final personal responsibility for each patient under his care. These members of the staff may hold part-time appointments at another hospital of a different type, do non-institutional work, and see patients in their own homes, thus having a broad professional experience.
4. Apprenticeship system of junior resident staff, each personally responsible to, and each individually trained by, a member of the senior visiting staff.
5. Admission open to all, and not restricted to local government boundaries.

These points will not, I think, be disputed by many of those who believe that the voluntary hospital system has something of real worth to contribute to the health services of the future. I have purposely not enlarged on them. But I must, even at the risk of Sir Frederick Menzies calling this a "Niagara-like cataract of words which are entirely meaningless," mention a much more controversial point. In my view the voluntary hospital system, largely owing to the above features and to the absence of cramping central control, provides great scope for the development and expression of individual initiative and personal responsibility, both so essential to good and satisfying work in clinical medicine.—I am, etc.,

London, Sept. 15. B. A. Butterworth.

Sir,—Sir Frederick Menzies's pertinent question (September 6, p. 353), "What are the particular virtues of the voluntary hospitals which are conspicuous by their absence in the municipal hospital system?" is apposite and of fundamental importance if the new hospital (and medical) system which is in the process of forging is to be an improvement. In evaluating the voluntary hospitals the three types should be noted—the teaching, the non-teaching staffed by consultants with over 100 beds, and the cottage hospital; the advantages are not entirely enjoyed by the last. The object of this letter is not to "make a case" for the voluntary hospital, but to try and articulate that happiness, that freedom and apparent superiority of the voluntary hospital, so that the pattern is everywhere available for patients.

The particular virtues of the voluntary hospital are:

1. The primary importance and independence of the clinician. The clinician accepts full responsibility for every patient in his beds and inspires the first loyalty of the staff—medical, nursing, and lay—for his patients. The system of "firms" with their rivalries develops initiative; the periodic visits assist discipline.
2. The staffs and departments of the voluntary hospitals are "open" for all to see. Students, general practitioners, and postgraduates are welcomed and encouraged to discuss and to criticize the clinical work.
3. Many voluntary hospitals have that precious possession tradition, in some cases of many centuries of service. The value of tradition is difficult to define but is easy to feel and recognize. Tradition, however, is not vital, for I have seen new voluntary hospitals staffed by consultants capture the "spirit" in a decade.
4. The voluntary system still provides the leaders, the thinkers, the writers, and the teachers in medicine and surgery.
5. The system of private consulting practice associated with the voluntary hospitals exerts an instructive and co-ordinating influence between the medical services and doctors of the district.

Residents, mostly prospective general practitioners, receive valuable tuition from a chief so engaged.

6. The "open" out-patient system enables doctors to select the man (not the department) possibly 100 miles away who will meet the needs of their patients.

7. Then the monthly medical committees and subcommittees—for example, the nursing and instruments—where hospital management is "thrashed out" in the light of the needs of the patient, of the district, and of experience garnered from other hospitals where the staff also serve, are invaluable. The practice whereby new developments and apparatus must be justified by the member of the staff to the satisfaction of his colleagues is excellent for practicability and economy. Although large institutions (as in London) may be able to buy cheaply, it is expensive to buy unsuitably.

8. In the voluntary hospitals the number of residents and visiting staff per bed is probably much higher than in the municipal hospitals. The voluntary hospitals are always working to capacity, at high pressure with usually efficient clinical service and a quick turnover.

9. They are generally short of money, and careful economic service is general.

From my own experience of municipal hospital service I recall that:

1. In municipal hospitals the first loyalty of the staff—medical, nursing, and lay—is to the Organization, which may, and indeed does, override the clinicians and may come between the clinician and patients.

2. The entrance gates of a municipal hospital are guarded, access is not easy, medical or surgical pilgrims need authority before they are allowed to enter. Patients, too, demand something more personal than a hospital superintendent or county hall. In supporting voluntary hospitals patients enjoy some pride of ownership and responsibility.

3. The municipal hospitals with clinicians holding the highest qualifications have been vigorous for some fifteen to twenty years. It may be apposite to check the original work and writing which has been forthcoming from this wealth of clinical material. How many of the staff are active members of the various medical societies? Does the organization *actively* encourage membership of learned societies and attendance at professional meetings throughout the country, or is this "mixing" with fellow clinicians passively resisted?

The voluntary hospital is a free, open institution made by its honorary medical staff and large-hearted laymen. The municipal hospital is usually a closed efficient organization: the first savours of a democracy, the latter of totalitarianism; both can be good or bad. The problem is to fuse the independent yet responsible visiting staff of the voluntary hospital with their clinical freedom with the fine organization of the municipal hospital.—I am, etc.,

London, W.1, Sept. 20. HAROLD DODD.

The Mental Defective in the Army

SIR,—The further letters elicited by Dr. Esher's article (August 9, p. 187) prompt me to return to the subject with your permission. I ventured in my letter in your issue of August 23 (p. 280) to suggest that Dr. Esher's proposed mental age standards were too high, and since then others have written to the same effect in greater detail.

The article referred to virtually asked the question: "Can the mentally defective man play any part in the modern armed Forces?" Gross degrees of deficiency are not, of course, being considered. Experience as a former medical officer in one of the Forces and in the colony for mentally defective men of which I have charge leads me to the belief that a fair proportion of feeble-minded men, otherwise healthy, can be satisfactorily utilized in certain units of the Forces, and that too high a standard of intelligence estimated by "test" at recruitment will lose the useful services of many.

The question of stability has been suggested very properly as one of the major criteria. Out of my present population of 420 defective men, some 250 are feeble-minded with mental ages of over 6½. During a longish period of frequent nocturnal air attack in the immediate area it was repeatedly observed by members of our staff that these men showed few signs of fear, preserved good discipline voluntarily, and rapidly became philosophical to the most exasperating discomforts. There was never any panic among them, even when a shelter containing thirty had its entrance ramp demolished by a direct hit by a high-explosive bomb, fortunately without casualties. This may mean only lack of sensitiveness, but the result is the same. I do not, of course, mean to suggest that the mental age of 6½ is a suitable standard.

Dr. Herd (September 20, p. 422) warns us rightly that too much reliance should not be placed on "mental age" assessed by standardized tests. It is difficult to see in what other way a rapidly operating medical recruitment board can gauge mental capacity. If these tests must be used, and it seems they must, then let the minimal assessment, at least on enlistment, not be too high, for that would be as wasteful of personnel as too low a minimal assessment would prove to be of training effort once in the Forces.

Where the mentally defective soldier shows moral delinquency resulting in anti-social conduct, repeated acquisition of or concealment of venereal or dirt-borne diseases, he has obviously become a nidus of indiscipline and a source of inefficiency. It is largely such defectives who should be notified and handed over at once to the civil authorities, but I gather the state of our civil laws does not allow such action yet, so the Service concerned can only discharge him as "Services no longer required."

As regards the "weeding-out" by Army psychiatrists of those defectives who are making unsatisfactory soldiers, there is one small possibility, mention of which I trust will not be offensive. Many of the psychiatrists are practitioners who until recently had only association with aspects of life quite different from soldiering. They may sometimes unconsciously allow their decisions to be led by the opinions of the men's officers and N.C.O.s, whose object may be in some cases a short cut to a "smart unit."—I am, etc.,

Brentry Colony, Bristol, Sept. 20. JAMES JOHNSTON MASON.

Depressive States in the Soldier

SIR,—I should be grateful if you would allow me to answer a few points raised after the publication of my article, "Depressive States in the Soldier" (July 26, p. 109).

I am sorry if I have attributed to Dr. C. H. Rogerson views which are not his. As he suggests desirable (August 9, p. 209), I endeavoured to curtail the neurosis-versus-psychosis argument as far as seemed possible, and I appear to have done this to such an extent as to have made false implications of his views—for which I must sincerely apologize to him.

Dr. Carver feels "bouts of narcotic substances" undesirable in shirking neurotics (as well as in alcoholics), but, as he will see from the table I showed, only very few of those who had prolonged narcosis could be so regarded: the latter treatment was reserved for patients with acute anxiety or making unsatisfactory progress.

I must thank Dr. Henry Yellowlees (August 16, p. 243) for his charitable and perfectly correct assumption that a slip of the pen was responsible for the misquotation of his views on insight: he was also correct in his assumption that the insight which I was venturing to assess was that of the patient rather than that of the physician.—I am, etc.,

Sept. 23. R. F. TREDGOLD.

Selection for the Army

SIR,—I was interested in your leading article on selection for the Army (September 20, p. 410), in which you reviewed the latest report of the Select Committee on National Expenditure. This report is "chiefly critical of the allocation of man-power once it has passed into the Service—not the occasional acceptance by the Army of medically unfit men, but the assignment of men to military occupations for which they are mentally ill adapted." With regard to the selection of officers, the committee holds that "the qualities essential to an officer cannot be ascertained solely by testing."

Since this report raises a really urgent and serious problem I venture to direct your attention to a psychological method of selection and allocation which appears to be wider in scope than intelligence tests—the analysis of handwriting, known as graphology. It is well known that the German War Office

have made use of this method for purposes of selection and allocation for the last ten or fifteen years, and particularly with regard to selection of officers and men with specially responsible tasks this method seems to have worked out satisfactorily. According to G. Kvergic, Hitler's air-pilot was selected with the help of an examination of handwriting (*News Letter*, vol. 4, No. 53, p. 641). In this country some child guidance clinics and institutes such as the Institute for the Scientific Treatment of Delinquency, as well as important business firms, have availed themselves of this method and have expressed their satisfaction.

I myself have had good results from graphological reports on patients of mine, not only with regard to their psychological problems but also as regards their vocational suitability. I have come to use graphological reports much in the same way as a physician will use laboratory or *x*-ray reports, for it is often possible for a graphologist to see at once into an aspect of the personality which can otherwise only be grasped after long investigation. I know that other psychotherapists have had similar experiences.

H. J. Jacoby reports that the graphological method was tested on an experimental-statistical basis, yielding a high degree of reliability—between 85% and 93% (*Analysis of Handwriting*, 1939, pp. 26-7 and 40), while R. A. S. Paget suggests that it may be useful to carry out similar control tests of this method in this country (*Nature*, April 27, 1940). Ernest Jones maintains that "graphology is now in a position to supply the data in an accessible form" (*Internat. J. Psycho-analysis*, vol. 21, October, 1940, part 4). It is my opinion that the task of interviewing officers could be shortened and lightened by the analysis of handwriting, which can ascertain essential personality qualities that cannot be discovered by interview and intelligence tests, and that this method, if applied in a reasonable and critical way, may fill a serious gap in the psychological means of selection and allocation in the Army at present at our disposal. The Ministries concerned should have no difficulty in obtaining the services of qualified advisers.—I am, etc.,

Nottingham, Sept. 22. MICHAEL FORDHAM, M.R.C.P.

Wholemeal Bread

SIR,—A general practitioner in earnest mood who bursts into print expects a certain amount of good-natured chaff from his friends, who perhaps read the first and last paragraphs of his letter. He also faces the possibility of kindly comment or caustic criticism from the experts. But rarely, I conceive, does he evoke such extraordinary criticisms as I received in a letter from Mr. J. C. Mottram (August 16, p. 244) in reply to my letter on wholemeal bread (July 12, p. 64).

The winning of this war may depend on the health of our nation. From a nutritional point of view wholemeal is of great importance to the community. It is sad, therefore, to hear it decried on account of two fallacious arguments, and more than disturbing to find it being replaced by so-called national wheatmeal, whose specification is such that it can comprise a variety of meals chameleonic in colour, kaleidoscopic in appearance, rich or poor in vitamins as the miller decides in his "gentleman's agreement" with the Government. It is illuminating by way of comparison to read the strict, detailed, definite specifications for *animal* feeding stuffs under the Feeding Stuffs Act.

The two fallacious arguments are: (1) that the roughage of wholemeal is undesirable in wartime; and (2) that wholemeal has very poor keeping qualities. I advocated wholemeal as the staple bread because of its splended nutritional value, especially for its iron and vitamin content. I pointed out that the M.R.C. preferred 85% extraction flour because "it is undesirable to increase the roughage in wartime diets." I suggested that this was a matter of opinion, for I could find only one reference to experimental work on the effect of roughage on the intestine, and this was not derogatory. Mr. Mottram gives six references "which may be added to the single one mentioned." Is Mr. Mottram pulling my leg? I have looked up the first four (two of which are incorrectly given) and was extremely surprised to find that none of them had anything to do with the subject of roughage and the alimentary canal! I confess I was so disappointed that I did not look up the last two. But, after all, a joke is a joke!

I pointed out that till recent years wholemeal was the only wheatmeal available and was eaten in double the quantity it is to-day. Mr. Mottram has it from "personal knowledge that germ meals consisting of a mixture of white flour and germ have been available to the public for over fifty years." The fault is mine; I apologize for the indeterminate "recent." As the hymn says: "A thousand ages in Thy sight are like an evening gone." My recent years started just before the fifty years of Mr. Mottram, which makes my statement no less true.

The M.R.C. objected to wholemeal because it could only be kept under reasonable conditions of storage for "four to six weeks or longer." I described an experiment wherein samples of wholemeal were kept in a bakery for six months without signs of deterioration. Mr. Mottram says "this is not a fair test, as it would not be practicable under ordinary manufacturing conditions to store flour at such temperatures in the summer." Mr. Mottram disappoints me. If a bakery in June, 1941, was not hot enough for experimental purposes, one might have to wait a long time for a hotter month. But his remarks suggest that he has some evidence on the keeping qualities of wholemeal and germ meal. I cannot find a single reference—not even one experiment on the susceptibility of wholemeal to the mysterious disease known as "rope"—to which he refers. If he has some evidence will he please bring it forward?

Here, then, is the position to-day. National wheatmeal is official. It will vary in value from loaf to loaf. No check is made on its iron or vitamin content. We "kid" ourselves that we are feeding the population scientifically.—I am, etc.,

Leeds, Sept. 24. R. A. MURRAY SCOTT.

Communal Feeding in Schools

SIR,—There are good reasons for making attendance at communal feeding centres compulsory. Their establishment cannot be justified by attacking any one class of the community; nor can they be justified by imputing such a degree of ignorance that appals and such a lack of intelligence that creates despair of ever training mothers of the working class in the right ways of diet. I also have been appalled by the ignorance manifested in food values. It is not the ignorance of the mothers of the working class that appals me: it is the ignorance, or rather the apathy and indifference, of our own profession to the modern facts of nutrition. For example, it seems, so far as I have been able to discover, that no systematic inquiry is made into the habitual dietetic habits of a patient either by general practitioners or by physicians at hospital out-patients. Again, is there any member of the medical boards established under the Military Service Act whose duty it is to study the dietetic habits of the new recruit?

Further, one of the main factors leading to diet deficiency is the use of white bread. In 1940 it was stated in Parliament that 95% of flour milled was white: 95% of all families, including professional and working class, therefore, consumed an article of food deficient in calcium, iron, and vitamins. Ignorance of food values is not peculiar to any one class.

There is a certain type of child for whom compulsory attendance is necessary. It is not a child from a family of the working class where there is lack of food and lack of knowledge of food values: there are other ways of dealing with these situations: it is the child who has developed faulty feeding habits. In my experience the child who is more likely to fall ill is the one who refuses to eat the food that the parent provides. The ignorance shown by the parent is not so much of food values as of how to persuade or to train the child to eat the food that the parent knows is good. This is the faddy child, or the one who does not like meat or fat, green vegetables or milk. Such children should be sought for by the medical or nursing staff of the public health services. Faddiness is apt to develop after acute catarrhal illnesses of the respiratory tract. After a preliminary period of residence at a convalescent home these children should be sent to a communal feeding centre. The purpose of such treatment is two-fold: first, to change the faulty feeding habits, and, secondly, to establish sound habits of feeding. Compulsory attendance should be maintained for a definite period of six months or longer, according to the home situation. The failure of the parent to establish right feeding habits should be thoroughly investigated. After the cessation of the period of compulsory attendance the child should be supervised, the home visited, and the co-operation of the parent enlisted to maintain the healthy habit of feeding.—I am, etc.,

P. A. GALPIN,
Tuberculosis Officer.

London, E.13, Sept. 15.

Cysticercosis Epilepsy

Sir,—In reply to Dr. C. W. Ewing's article on cysticercosis epilepsy (August 23, p. 263), in which information is requested as to the presence of cysts in the cerebrum in the case reported by me, I have to state that radiographic films of the skull proved inconclusive in this case. There was an opaque object situated in the left frontal region, but as the degree of opacity was less than in the other cysts it was considered advisable to carry out radiographic examinations on the case at yearly intervals in order to assess the degree of calcification rather than to make a definite diagnosis at the time. The cerebral findings were therefore omitted until such time as more definite evidence of intracerebral calcification of the cysts became available.—I am, etc.,

Glasgow, Sept. 18. William Blyth.

Scabies: Questionable Evidence of Cure

Sir,—Medical journals continue to report treatments for scabies. Each writer finds his or her method efficient; cases reported on are often few, and control by dermatologist or entomologist is almost invariably lacking. Successes are claimed on questionable evidence. How many readers (or contributors!) are aware that scabies may for weeks be undetected and cause no local discomfort? Absence of obvious lesion and irritation is no proof of cure. Presence thereof provides no evidence of persisting infestation.

Kenneth Mellanby has already shown that we may be blindly accepting prejudiced concepts. His work to be published later may still further disillusion enthusiasts who claim discovery of a panacea. Personal investigation and conversation with Mellanby's willing volunteers might enlighten contributors. Those called upon to treat scabies should accept reports in which test of cure is dependent on the absence of living acari. Superficial inspection and patients' comment recorded a fortnight after treatment should under no circumstances be regarded as criteria of cure.—I am, etc.,

P. B. Mumford, M.D., F.R.C.P.

Familial Neurofibromatosis

Sir,—Dr. A. Garland's memorandum on the hereditary nature of Von Recklinghausen's disease (August 26, p. 120) gets further support from three cases that have come under my observation. The father, a man of small stature who died comparatively young, had patches of brown pigmentation on the body, with masses of pedunculated and sessile tumours under the chin, on both arms, neck, chest, and back. His sister, a diminutive woman with marked kyphosis and scoliosis, has similar pigmentation and the same distribution of tumours. His two daughters have the neurofibromata on the arms, neck, chest, and back; but so far pigmentation has not developed. His father, who was small of stature and of a low-grade mentality, was a typical case of neurofibromatosis.—I am, etc.,

Wellington, Somerset, Sept. 20. S. McClements.

Treatment of Impetigo

Sir,—The letter from Dr. G. A. Grant Peterkin (September 20, p. 422) might well have been the last word in this correspondence, for 2% aqueous solution of gentian violet is a simple, effective, and economical treatment for impetigo, and the Edinburgh school deserves credit for popularizing it in British dermatological clinics. Ointments are less effective, and examples of impetigo, refractory or spreading under ointment, are common in large skin clinics, and many cases of sycosis barbae appear to be the result of ointment therapy. These unfavourable results might be expected, for a film of grease retains exudates and sweat, which encourage the growth of organisms and irritate the follicles. Nature's defence against skin infection is the dry, intact stratum corneum, and our treatment should be designed to maintain it.

The common types of impetigo are scaly, scabbed, bullous, circinate, and ulcerative, and treatment has to be adjusted accordingly. If healed lesions are present it indicates that the patient can cope with the infection without the aid of antiseptics, and simple cleansing with carbolic soap followed by the application of calamine lotion or a dusting powder to dry the active lesions will usually terminate the infection in three days. Scabs and crusts should be removed, and this is facilitated by the use of hot compresses of 1% sod. bicarb. or 1% sod. sulphate, and then a lotion is applied to the clean red moist surface. Outpatients with exposed lesions prefer a less conspicuous colour than violet, and acriflavine 1/1,000 plus 4% tannic acid to diminish exudation when necessary is a good application, but lot. calamin. plus 2% phenol or the lotion of zinc and copper sulphate are just as useful, always providing that no idiosyncrasy towards them exists.

Under such treatment most cases resolve in five to ten days, but occasionally a deeper erythema around a lesion denotes a more virulent infection, and then proseptasine, 1 gramme t.i.d. for a week, and sulphanilamide powder to the lesions often cause dramatic improvement. Sulphanilamide is unnecessary and has no demonstrable effect upon the average case of impetigo. Ointments have a limited use in preventing the formation of hard crusts in the scalp over-night, but even for the scaly variety of impetigo a cream or paste is preferable to an ointment, and their use instead of the latter means a saving of 50% of the fatty base. No mention has been made of mercury, because, although of value, it is more essential to the national economy in war industries.—I am, etc.,

London, W.1, Sept. 21. R. T. Brain.

Surgical Statistics for the General Surgeon

Sir,—I consider that Mr. J. C. Goligher, in his article on the operability of carcinoma of the rectum (September 20, p. 393), has presented statistics of the utmost value to the general surgeon, who also meets such cases constantly day by day. I have read his article again and again, and consider it to be just such a classical statistical record for our guidance as was that of Winsbury-White many years ago in the *British Journal of Surgery* on findings on prostatic cases at St. Peter's Hospital. Though many general surgeons have special leanings to certain branches, in these days we have to have the up-to-date figures of our colleagues for specialties which we also have to deal with, and they should be encouraged to publish such articles as the above quoted.—I am, etc.,

Oxford, Sept. 23. Hugh Whitelocke.

Puerperal Tetanus

Sir,—We are grateful to Prof. Fletcher Shaw (September 20, p. 418) and to Mr. Owen-Jones (September 13, p. 388) for drawing our attention to the Tetanus Committee's report in the *Journal of Obstetrics and Gynaecology of the British Empire* for June, 1941, with reference to the anaerobic infection of vulval pads and infection of cotton-wools and cellular tissues after sterilization in manufacture, and on the difficulty of eliminating spore-bearing organisms unless absolutely rigid technique of sterilization is followed. But we must point out that our article on puerperal tetanus was submitted before publication of this report. In our article we had referred to foreign journals in view of the fact that we could obtain no reference to recorded cases occurring in the British Isles.

After perusal of the committee's report we find that S. Merriman, in 1838, reported one death from puerperal tetanus in 10,190 confinements, and J. Y. Simpson, in 1854, wrote an article on tetanus following abortion and parturition, and commented on the association of plugging the vagina in cases of abortion and the onset of tetanus.

The committee was not able to obtain recent statistics in relation to non-fatal cases, and it describes figures of fatal cases from the reports of the Registrar-General and from representative institutions with large maternity departments. The Registrar-General's figures showed that a century ago there were only two fatal cases in the year 1840, an incidence of 1 in 250,000. For the years 1927 to 1937 there were 10 cases, giving an incidence of 1 in 700,000 deliveries. Figures from the institutions recorded only one fatal case of tetanus.

The committee reported that in spite of the fact that the risk of tetanus may be very remote it was important to investigate the possible part played by dressings as a source of infection, and it felt that after investigations which confirm that cotton-wools and cellulose dressings are generally heavily infected with spore-bearing anaerobic bacteria, among them virulent strains of tetanus bacilli, there is nothing improbable that such dressings are a potential source of surgical and puerperal tetanus. It admitted that there are many other possible sources of infection with the *Bacillus tetani* in the puerperium, and, therefore,

it is not possible to be certain of the part played by dressings in the aetiology of clinical tetanus.

Though the matter is not yet quite clear as to whether infection of the vulva arises from infected pads or from the rectum, there still remains the unexplained query why the condition is so rare. We would point out that we have been unable to trace in the British Isles any case of recovery from puerperal tetanus—apart from that we recently published in your *Journal*.—We are, etc.,

Bruce Maclean.
Newcastle, Staffordshire, Sept. 25. P. Challen.

*** The subject of this letter was discussed in an annotation in last week's *Journal* (p. 445).—Ed., *B.M.J.*

Epidural Novocain Injection in Cervical Cancer

Sir,—I wonder whether any reader could explain the following, which I find rather puzzling. Cases of carcinoma of the cervix uteri with pelvic and perineal pain are relieved by epidural injection of novocain followed by saline (up to 200 c.cm.), and the relief may last for months. The effect can hardly be psychological, but I cannot think of a rational explanation of the relief of the pain, which is presumably due to pressure and strangulation of the nerves in the pelvis. There is no evidence of anaesthesia of the perineum following the injection, which rules out a forcible rupture of nerve fibres.—I am, etc.,

Sheffield, Sept. 22. J. Walter, D.M.R.E.

Obituary

ROBERT THIN, LL.D., M.B., C.M.

Past-President, Royal College of Physicians of Edinburgh

The death has occurred at the age of 80 of Dr. Robert Thin, a Fellow and former President of the Royal College of Physicians of Edinburgh; he had been a member of the British Medical Association for fifty-two years, held high local office in the Association, and attended many of the Annual Meetings.

The son of James Thin and Catherine Traquair, he went to the Royal High School, Edinburgh, and thence to the University, where he first took an Arts course and graduated M.A., and proceeded to the M.B. and C.M. degrees in 1887. After serving as resident surgeon and resident physician at the Royal Infirmary, and as resident physician at the Royal Hospital for Sick Children, he did postgraduate work in Vienna and Prague. On his return to Edinburgh in 1890 he set up in general practice and held a medical appointment at the Forth Bridge Works. He obtained the M.R.C.P.Ed. in 1892 and was elected to the Fellowship in the following year. He served the College as Honorary Librarian from 1923 to 1931, was Vice-President in 1928-30, and for a general practitioner had the unusual distinction of holding office as President of the College in 1931-3. On vacating the presidential chair he received from the University of Edinburgh the honorary degree of LL.D.

Dr. Thin joined the British Medical Association in 1890; he was chairman of the Edinburgh and Leith Division in 1922 and acted as its representative at five Annual Meetings of the Association, the last one being the Centenary in London. He was elected President of the Edinburgh Branch in 1924. He contributed articles to medical journals, mostly on the history of medicine; his writings included an interesting account of the old Royal Infirmary and earlier hospitals, and under the title "College Portraits" a group of attractive biographical sketches of the medical worthies of Edinburgh in former times.

In the daily round of practice Dr. Thin gave of his best to all who sought his help, and the skill and sympathy he bestowed upon them won him the love and gratitude of his patients and their friends. He had no doubt about the high place of the family physician in the framework of medicine, and his long life of service bore testimony to this conviction.

J. LOUGHEED BASKIN, M.D.

Dr. Joseph Lougheed Baskin of Worminghall, Bucks, who died at Oxford on August 30 at the age of 71, was a distinguished physician and neurologist.

Born at Enniskillen, son of the Rev. Charles Baskin of Belfast, he was educated at Armagh, and took the Scottish triple qualification in 1897 after studying medicine in London, Cork, and Edinburgh. In 1911 he obtained the Brussels M.D. His life-work was devoted to psychiatry, which he practised in many different institutions. He served as medical officer to the Belfast Mental Hospital, the Royal Albert Hospital, Devonport, and the Devon County Mental Hospital, Axminster. In more recent times he was special neurologist for the Ministry of Pensions at Maudsley, and did a spell of post-war duty at Ashurst, Littlemore. For many years he was superintendent at Fisherton House, Salisbury, when it was the largest private mental institution in the country. Dr. Baskin published a number of papers in medical journals, including articles on katatonia and on the influence of gardening as a form of treatment. He was a member of many learned societies, all connected with his branch of medicine, and his work was always marked by its originality and analytical character. He had long been a keen member of the British Medical Association, and frequently attended the Annual Meetings, where he took special pleasure in promoting the social activities of the Irish members. He served as secretary of the Section of Neurology and Psychological Medicine at the Brighton Meeting in 1913, and was for some time secretary of the Irish Medical Schools and Graduates Association.

In his time, writes a colleague, Dr. Baskin was well known in many directions outside his profession. He was a minor poet of some distinction, and his work, mostly of the pastoral lyric or sonnet type, was favourably known to many, including Dr. Robert Bridges. His interest in sport was diverse, but he excelled in aquatics, and he had many awards as an expert swimmer in the South of England. Dog breeding and exhibiting was a hobby, and while in Salisbury he was admitted to be the leading breeder of Pomeranians. He was an instinctive naturalist, and his wide knowledge of plant, tree, and bird life was a never-failing mine of information for those who sought his advice. His later years were given up to intensive teaching of first-aid and ambulance work in many of the villages surrounding his home. He served with distinction in the last war, where he saw service with a battalion of the London Fusiliers and later with a heavy artillery brigade. He was severely wounded at Messines and recommended for the Military Cross. His was a very full life, and he served well his generation and his country.

B. R. ARCHER TAYLOR, M.R.C.S.

We regret to announce the death, on the eve of his eighty-sixth birthday, of Dr. Benjamin Robert Archer Taylor at his home in Meckering, Western Australia. He had belonged to the B.M.A. for fifty-eight years and was the oldest member of the Western Australian Branch.

Dr. Archer Taylor was born on June 29, 1855, at Tottenham, Middlesex, and on leaving school was entered at Lloyds. He was still there when Ferdinand de Lesseps visited England not long after the opening of the Suez Canal; the visit left a deep impression on his mind, and he often related how the company sprang as one man to its feet cheering wildly. Finding the work at Lloyds too slow for his vigorous spirit, he resigned his position and began the study of medicine as a student at Guy's Hospital. The four senior surgeons at Guy's in his day were Cooper-Foster, Thomas Bryant, Arthur Durham, and Henry Howse. He acted as dresser to Cooper-Foster, and related that on one occasion while he was at work Arthur Durham came in and stopped at the bed of the patient whom he was examining. Durham entered into conversation with Cooper-Foster and a discussion arose regarding Listerism, which had then come into vogue: Durham said with sarcastic humour, "These Listerites will soon be opening the peritoneum." Of the four senior surgeons, Howse was the only one who had adopted the teachings of Lister at that time; he was the junior of the four. Lister had been appointed Professor of Clinical Surgery at King's College, London, just a year before this.

Archer Taylor qualified L.S.A. in 1880 and M.R.C.S. in 1881. Not long afterwards he bought a practice at Kendal, Westmorland, where he remained for over twenty years: he was on the committee of the Westmorland County Hospital and was also a magistrate for the Borough of Kendal. An acute attack of rheumatic fever caused him to turn his thoughts to a warmer and drier climate, and he applied for a practice at Broome, Western Australia: his application, however, came too late, but his eyes being turned towards Australia, it was only a matter of time when an opportunity presented itself. Sir Gerald Strickland of Sizar Castle, Kendal, having been appointed Governor of Tasmania about that time—he was later Governor of Western Australia—reports reached Dr. Archer Taylor concerning the favourable climate there, and in 1909 he bought a practice at Swansea, East Coast, Tasmania, where after a short residence his health was completely restored. He returned to England and took a course at Moorfields Eye Hospital, London, going back to Australia in 1913 and settling at Temora, New South Wales. After the war he went to Ceylon and practised at Nuwara Eliya, but returned to Australia in 1921 and settled at Meckering, where he practised until his death, exactly twenty years later. Archer Taylor belonged to the old school. He had a whimsical sense of humour and his mind did not track along the usual ruts; so that, always open to new impressions, he was in the forefront of any community with which he was associated. He was an ardent optimist, a loyal and generous friend, and a practitioner of the kind that is honoured with the confidence and love of his patients. He was a keen cricketer and an enthusiastic golfer almost to the time of his death.

Dr. Thomas Ronald Fulton, who died suddenly on August 5 at Sutton-on-Sea, Lincolnshire, where he had been in general practice since 1936, graduated M.B., Ch.B. at Glasgow University in 1916. He immediately joined the R.A.M.C. and served in India and Mesopotamia with the rank of captain during the last war. In 1920 he became a partner with the late Dr. Alex. Day, M.B.E., and Dr. V. E. Badcock, M.C., at Wooler, Northumberland, where his practice extended far into the Cheviot Hills. He remained in Wooler until the end of 1935. For many years he was a member of the B.M.A., and was chairman of the North Northumberland Division in 1926-7. He was medical officer at the infant and child welfare centre at Wooler; and later on medical officer to the Mablethorpe Convalescent Home and Alford War Memorial Hospital while at Sutton-on-Sea. Dr. Fulton was a keen golfer and was president of the Wooler Golf Club for a number of years. He leaves a widow and three children.

We regret to record the death of Mr. Matthew Logan Taylor at his home in Park Quadrant, Glasgow, on August 20. Mr. Logan Taylor was the son of a doctor in Johnstone. He graduated at Glasgow University in 1897, and after passing through the house-physician and house-surgeon terms in the Western Infirmary became an assistant in the pathological department of the Western Infirmary and to the University professor of pathology, Sir Robert Muir. About the same time he was appointed surgeon to the out-patient department of the Royal Hospital for Sick Children and to the out-patient department of the Western Infirmary. Before settling down in Glasgow he was for a time in charge of a malaria expedition in Sierra Leone and the Gold Coast; that work was most favourably noticed by Sir Ronald Ross. During the war of 1914-18 Mr. Logan Taylor was Captain, R.A.M.C., in No. 3 Scottish General Hospital, Stobhill. For nine years (1915-24) he held the appointment of casualty surgeon at the Central Police Station. He was appointed visiting surgeon to the Western Infirmary in 1922. On his retirement under the age limit in 1940 he was appointed honorary consulting surgeon. For some years he acted as consulting surgeon at Dumbarton Cottage Hospital, and in the last few years held a similar appointment at Greenock Royal Infirmary. His contributions to medical literature were mainly along pathological lines. An article contributed to the *Journal of Pathology and Bacteriology* jointly with the late Prof. Teacher on a series of double malignant tumours, and another, published in the *Proceedings* of the Pathological Society of Great Britain, on a case of chorion epithelioma and adenocarcinoma of the testicle, were substantial contributions. His interest in pathology was maintained throughout the whole of his surgical career.

The Services

NAVAL AWARD AND COMMENDATION

The D.S.C. has been awarded to Temporary Surgeon Lieut. Alexander Gibson Reid, R.N.V.R., for bravery and devotion to duty during an enemy air attack in which H.M.S. *Mashona* was sunk; and Surgeon Lieut. Joseph Patterson, R.N.V.R., has been commended for bravery during an air raid on Plymouth.

AIR FORCE AWARDS AND MENTIONS IN DISPATCHES

The O.B.E. (Military Division) has been awarded to Acting Wing Commander James Proctor Huins, A.A.F., and to Acting Squadron Leader Benjamin Charles Curwood, R.A.F., in recognition of distinguished services rendered in operational commands of the Royal Air Force during the period October 1, 1940, to March 31, 1941.

Acting Group Captain Percival Maurice Keane, R.A.F., Acting Squadron Leader Thomas Arthur Hunt, R.A.F., and Squadron Leader Malcolm Langley Maley, R.A.F.V.R., have been mentioned in dispatches by Air Officers Commanding-in-Chief.

CASUALTIES IN THE MEDICAL SERVICES

Royal Navy

Prisoner of War

Surgeon Lieut. Patrick Christopher Steptoe, R.N.V.R.

Medical News

A meeting of the Section of Orthopaedics of the Royal Society of Medicine will be held at Horton Hospital, Epsom, on Saturday, October 11, at 2 p.m., when short papers on "The Problem of the Foot in Service Cases," "Psychological Reactions to Injury," "Conditions of the Back simulating Visceral Disease," "Spinal Cases of Interest," and "Some Points in the Diagnosis of Osteochondritis of the Knee" will be read. Clinical cases and x-rays of interest and special cases will be shown, and there will be a demonstration of physical treatment.

At the annual meeting of the Hospital Saturday Fund, presided over by the Lord Mayor of London at the Mansion House, Sir Walter Womersley, M.P., Minister of Pensions, said that the restoration of disabled men to employment had been the subject of frequent conferences between the Ministry of Pensions and the Ministry of Labour and National Service. Everything is being done, he said, to ensure that while the disabled man receives treatment in hospital he is also considered in relation to his employability, so that there may be no delay in putting him into direct contact with the training schemes that are being developed by the Ministry of Labour.

On Saturday, September 27, the Chartered Society of Massage and Medical Gymnastics held a half-day congress in the Cowdray Hall of the Royal College of Nursing, Cavendish Square, W. The Founders' Lecture, at which Lord Horder took the chair, was given by Prof. F. Wood Jones, F.R.S., F.R.C.S., on "The Muscles of the Body Cavity."

Sir Bernard Docker, as chairman of the British Hospitals Association, has approached the Ministry of Health with regard to the growing difficulty experienced by all hospitals in getting and keeping domestic staffs, a matter which has been publicly ventilated in the *Times* by a letter from Dame Agnes Hunt, honorary superintendent of the Shropshire Orthopaedic Hospital.

The September issue of the *Glasgow Medical Journal* (Alex. Macdougall, 104, West George Street, 3s.) opens with an article on the effort syndrome by Lieut.-Colonel J. Gibson Graham and Captain J. D. Olav Kerr, and includes an Educational Supplement giving full particulars of the curriculum at the Glasgow Medical School.

An epidemic of infantile paralysis, the largest in the history of the province, has recently broken out in Manitoba. In the latter part of August there were more than a hundred cases. Most of the attacks are slight and there have been only a few deaths so far.

The draft Defence Regulation referred to in this column on September 13 (p. 390) came into operation on October 2, from which date no paraffin emulsion may be manufactured containing more than 25% volume in volume of liquid paraffin.

Field-Marshal Sir Philip Chetwode, chairman of the Executive Committee of the Red Cross and St. John War Organization, in a statement made last week, said that they had been officially informed that the Soviet Government would welcome the aid of the British Red Cross in supplementing its supplies of medical and other goods for the use of sick and wounded members of the Soviet armed Forces and for civilians injured by enemy action. The British Red Cross had accordingly allocated £250,000, which would be available to deal with all the immediate needs of Russia and of our other Allies. The organization is prepared to place the whole of its machinery at the disposal of any bodies that may wish to take advantage of its facilities for the purchase and transmission of supplies. Since the assumption of these great new responsibilities will add much to the financial requirements of the organization, Sir Philip Chetwode has asked Lord Iliffe, chairman of the Duke of Gloucester's Red Cross and St. John Fund, to issue a special appeal for funds.

Sir Robert Robinson, Waynflete Professor of Chemistry in the University of Oxford, has been awarded the first Paracelsus Gold Medal of the Swiss Chemical Society.

The McGill Medical Faculty, Montreal, opened its term with 400 students, which is considerably more than had been expected.

EPIDEMIOLOGICAL NOTES

Discussion of the Table

A further decline was recorded in the incidence of measles in England and Wales, 136 fewer cases being notified than in the preceding week. The notifications of whooping-cough also showed a substantial decline (319), the total of 2,710 cases being the smallest recorded this year. For the fifth consecutive week the incidence of diphtheria has increased; the increase is not yet general, however, being confined to the northern counties and Wales. The trend of this disease during the coming months will be of special interest in view of the immunization campaign. A slight rise was recorded in the incidence of scarlet fever, and the notifications have exceeded 1,000 for the first time since the end of May. In Scotland whooping-cough, after the large increase reported in the preceding week, declined; there were, however, increases in the notifications of diphtheria (20), measles (26), and scarlet fever (1).

Paratyphoid declined in England and Wales. A further 27 cases were notified from Bristol C.B. The only other area with a large number of cases was Liverpool C.B., with 14. In Scotland the 15 cases notified were 5 in excess of the number for the preceding week.

Dysentery

The 94 cases of dysentery notified in England and Wales, and the 67 cases in Scotland, represent an increase of approximately 50% on the totals of the previous week. The chief of the local outbreaks in England and Wales were those of Gloucestershire (Bristol C.B. 13) and Suffolk E. (Blyth R.D. 13). In Scotland the principal outbreaks were those of Aberdeen Burgh 8, Dundee 12, Lanark County 21, and Glasgow 12.

Cerebrospinal Fever

There were 118 cases of cerebrospinal fever in England and Wales, a decrease of 10 compared with the preceding week. The largest returns were those of Lancaster 22, Yorkshire, West Riding 15, and Glamorganshire 10. Although the number of cases notified in Scotland was unchanged during the past two weeks, the cases in Glasgow have risen from 6 to 10.

Poliomyelitis

An increase of 7 cases on the total for the preceding week was recorded in England and Wales, but the number of counties notifying the disease diminished by three. Berkshire with 5 cases (Maidenhead M.B. 4 and Cookham R.D. 1) had the largest county total. Four cases were notified in London (Bermondsey 1, Fulham 2, and Paddington 1). The only other registration area with more than one case was Oxford C.B. 2. Three cases were reported from each of the following counties: Lancashire, Middlesex, Oxfordshire, and Somerset. No case was reported from Buckinghamshire. The 2 cases in Scotland were from the county of Ayr.

No. 37

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended September 13.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1941					1940 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	118	6	23	3	11	122	2	37	2	5
Deaths		1	—				5	6		
Diphtheria	917	30	254	13	30	1,027	28	348	31	30
Deaths	22	—	5	1	1	41	1	16	1	2
Dysentery	94	9	67		—	33	5	63		—
Deaths			—	—	—			—	—	—
Encephalitis lethargica, acute	1	—	—		—	4	—	—		—
Deaths		—	—				—	1		
Enteric (typhoid) fever*	49	4	7	8	3	93	1	20	12	1
Deaths	1	1	—	—	1	—	—	—	—	—
Erysipelas		—	48	4	2		7	58	3	7
Deaths		—	—				—	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	25	3	16	16	8	62	3	13	17	11
Measles	808	25	38	35	1	6,179	78	405		19
Deaths	2	—	—	1	—	14	—	2	1	—
Ophthalmia neonatorum	83	9	20	2	—	91	1	19	—	—
Deaths										
Paratyphoid A and B	141	8	15	1						
Deaths	1	—	—	—						
Pneumonia, influenzal†	466	16	3		5	440	13	2		4
Deaths (from influenza)	8	8	—	—	3	9	—	—	—	—
Pneumonia, primary			132	11				105	9	
Deaths				9	—				1	5
Polio-encephalitis, acute	4	—				6	—			
Deaths										
Poliomyelitis, acute	36	4	2	1	1	47	—	10	—	—
Deaths			—					—		
Puerperal fever	1	1	19	4	—	3	3	13	1	—
Deaths		—					—			
Puerperal pyrexia	150	13	11		3	113	3	17		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,005	39	185	51	23	1,384	47	157	31	27
Deaths	3	—	—	—	—	2	—	—	—	1
Small-pox	—	—	—		—	—	—	—		—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths			—	—	—			—	—	—
Whooping-cough	2,710	246	153	35	16	1,106	8	111	—	13
Deaths	15	3	6	3	—	7	1	1	2	1
Deaths (0-1 year)	256	15	55	52	20	328	50	53	25	24
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,436	419	535	173	113	5,228	1450	544	154	120
Annual death rate (per 1,000 persons living)			11·6	11·5	‡			11·0	10·3	10·5
Live births	4,910	423	828	452	235	5,438	665	878	327	219
Annual rate per 1,000 persons living			16·8	30·0	‡			17·8	21·8	19·2
Stillbirths	185	16	35			207	20	45		
Rate per 1,000 total births (including stillborn)			41					49		

* Includes paratyphoid A and B for Northern Ireland.
† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.
‡ Owing to evacuation schemes and other movements of population, the birth and death rates for Northern Ireland are no longer available.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to The EDITOR, British Medical Journal, B.M.A. House, Tavistock Square, W.C.1.

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Telephone No.—B.M.A. and *B.M.J.*: EUSTON 2111.

Telegraphic Addresses.—EDITOR, *Aitiology Westcent, London;* SECRETARY, *Medisecra Westcent, London.*

B.M.A. Scottish Office: 7, Drumsheugh Gardens, Edinburgh.

QUERIES AND ANSWERS

Neurovascular Disorders

J. B. writes: I should be grateful for advice in the treatment of the following case. A man over 75 has suffered for six months from: (1) Numbness in right toes and loss of sensation to light touch. (2) Pain in right calf after three minutes' walk; there is complete relief from pain after two minutes' rest. (3) Mild angina on severe exertion (this for a few years). (4) Imperceptible pulses in posterior tibial arteries. The kidneys and other organs appear to be normal.

Function of the Vocal Cords

Dr. John Donald (Edinburgh) writes: Can one of your readers tell me where I may find in literature any information referring to Claudius Galen having been the first to suggest, about the year A.D. 200, that the generation of sound was in the vocal cords?

Recurrent Erysipelas

Dr. A. J. Colby Tingey writes in reply to E. C. A. (September 13, p. 392): Some years ago I was successful in treating a case of recurrent erysipelas with erysipelas phylacogen. This remedy is prepared by Messrs. Parke, Davis and Co., and is stated to be a sterile aqueous solution of bacterial derivatives from cultures of streptococcus and staphylococcus. Injected in a series of doses subcutaneously, it may be expected to produce some degree of immunity to the infection. My patient did not complain of any severe reaction. Autohaemotherapy is another method of treatment which has been favourably reported on in cases of streptococcal infections, including erysipelas.

Dr. F. F. Hellier (Leeds) writes in reply to E. C. A. (September 13, p. 392): This is frequently due to some streptococcal infection in the nose, such as an infected sinus and/or a streptococcal fissure. Sinus infection may require an operation, but if there is a fissure at the corner of the nares, or at the bottom of the ear, it should be painted with a silver nitrate pencil, or 10% silver nitrate in 90% spirit. General artificial sunlight will help to improve her resistance.

Warts

Dr. F. J. Allen writes from Letchworth in answer to J. W. (September 13, p. 392): Is the headmaster of the school aware that warts are often due to an infection from garden earth? The most severe case I ever saw was in a gardener, who had the back of one hand entirely covered with them. As a child I used to play in a garden, handling the soil, and I then had several warts. In recent years, while doing much gardening, I had three warts on the palmar surface of the hands. One of them was large, fungating, and as painful as a corn on the foot. Radium seemed not to affect it, so I pulled out the enormously enlarged papilla and applied acid mercuric nitrate. The wart then healed in a week, and left a hardly perceptible scar.

Income Tax

Deductions from Salary

W. M. has been refused deductions for (*a*) "interest of £8 paid on hire purchase agreement for loan of £100 to purchase car," (*b*) replacement of medical books, and (*c*) interest on loan from a relative, the interest having been paid without deduction of tax.

*** (*a*) If the transaction is really one of "hire purchase"—the "interest" being paid to the *future* vendor of the car—the £8 can be regarded as a payment for hire, and will be allowable if, e.g., car allowances, running costs, etc., are allowable in W. M.'s circumstances. (*b*) This is strictly not allowable as the income is assessed under Schedule E. (*c*) Loan interest is not allowable; tax should have been deducted, and any claim for exemption, etc., made by the relative. Retrospective deduction can be arranged by agreement with the inspector, or if the relative can be shown to be exempt from income tax the inspector may be able to give W. M. the allowance for this year, if not for the future.

LETTERS, NOTES, ETC.

Treatment of Incontinence in Children over Four

Dr. J. Hartsilver (Hove) writes: I have found the following method of treatment successful where other and more orthodox ones have failed. It would be of value if a more extensive trial could be made. It is assumed that any local cause has been excluded. First the urine should be examined. Then no fluids should be taken after 4.30 p.m. A thin night garment should be worn, and there should be as few bedclothes as possible. Curtains should be drawn back and window opened after the child is in bed. The child should be wakened every three hours to pass water whether he likes it or not, and a note taken of the times when the bed is wet; the child should then be made to pass water half an hour before such times. Next morning the draw-sheet should be pulled out, and if it is wet the child should be made with much firmness and kindness and without scolding to wash the sheet and his night attire. There is a nervous background to most cases of bed-wetting which should be investigated; it usually dates from some illness or mental upset.

Dust Infection in Wards

Lieutenant-Colonel H. A. Moffat, F.R.C.S., S.A.M.C., writes from South Africa: In all the articles which have recently appeared in the *Journal* on the above subject it is surprising that no mention is made of the use of vacuum cleaners instead of sweeping, and apparently no work has been done to test the effectiveness of their use. With vacuum cleaners the organisms on the floors are removed, not left stuck to the floors as by the oil methods. Further, blankets, etc., can be cleansed of dust and so of organisms. Hospitals appear to be behind the times in this respect, since private houses and office premises use these cleaners extensively.

Status of the Ship Surgeon

Dr. J. L. Barford (Redhill, Surrey) writes: The status of the Merchant Navy is once again "in the news"—How long, O Lord, how long? May I urge that consideration be given to the establishment of a Royal Merchant Service Medical Service. During fifteen years in the Merchant Service I made endeavour, perhaps at times misguided, to raise the status of the ship surgeon. That it is "low" in the public estimate may be instanced by the fact that so popular a writer as Francis Brett Young typifies a ship surgeon as a "slovenly elderly man with a scurfy coat collar who drifts from place to place and has a voice heavily charged with whisky and orange peel." But apparently Mr. Brett Young found the pen more profitable than the stethoscope.

Rose-hips for Vitamin Syrup

Plans have been made by the Ministry of Health and the Department of Health for Scotland to harvest the vitamin wealth of Britain's hedgerows in the form of wild rose-hips, which are now well known to be particularly rich in vitamin C. Both garden and wild varieties are twenty times richer in this vitamin than oranges, but hitherto these health-producing fruits have been allowed to go to waste. The collecting is being organized chiefly through schools, boy scouts, and girl guides, the Women's Institutes, and the Scottish Women's Rural Institutes. The hips, which must be ripe, can be gathered from wild or cultivated bushes, but they should be free from bits of stem and leaves. Haws, the red berries of the hawthorn or may tree, are not wanted, and care should be taken to avoid picking them. The gathering season extends until the end of October. The collecting organizations will supply the rose-hips in bulk to a number of firms who have agreed to pay for them at the rate of 2s. for 14 lb. (minimum 28 lb.), carriage forward. Small quantities should not be sent direct to the firms, but be handed in to a collecting depot. Anyone who, however, is able to pick a large quantity can obtain the name and address of the nearest manufacturing firm from any of the collecting organizations or from the Women's Voluntary Services. As a result of the campaign it is hoped that some 500 tons of rose-hips will be converted into a tasty health-fortifying syrup for the benefit of babies, children, and adults. The syrup will be marketed at a reasonable price